1044b UIC - EAST POPLAR OIL FIELD
ENFORCEMENT CASE SDWA 1431
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[redacted]

EAST POPLAR UNIT WELL NO. 63

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION--OPERATOR

EAST POPLAR UNIT WELL NO. 63

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION--OPERATOR

WELL HISTORY

WELL NO.:	East Poplar Unit No. 63
LOCATION:	SW NE Section 27, Township 28 North, Range 51 East
ELEVATION:	2150' Ground - 2162' K.B.
CONTRACTOR:	Zach Brooks Drilling Company
SPUDDED:	7:30 P.M., September 11, 1955
COMPLETED:	February 8, 1956
TOTAL DEPTH:	8521' Schlumberger equals 8514' Driller
CASING:	10-3/4" @ 1062.01' with 700 sacks of cement 5-1/2" @ 5945.00' with 350 sacks of cement
TUBING:	2-3/8" @ 5238.15'
PERFORATIONS:	5231'-5243'
PACKER:	None
ACID TREATMENT:	294 gallons mud acid
INITIAL POTENTIAL:	24 hour test on 1/2" choke, flow rate 54.00 BFPD, 1/10 of 1 percent basic sediment, TFP--0#
TYPE COMPLETION:	Single completion from the Kibbey Sandstone

Form No. 2.
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
SEP 15 1955
OIL AND GAS CONSERVATION COMMISSION
STATE OF MONTANA
BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, or Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 14, 19 55

Following is a { notice of intention to do work / report of work done } on land { owned / leased } described as follows:

LEASE BLM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51 (Range) M.P.M. (Meridian)

The well is located 1980 ft. from { N / S } line and 1980 ft. from { E / W } line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Spudded 7:30 P.M., 9-11-55. Ran 34 jts. 1049.01' of 10 3/4" 40.50# H-40 and J-55, 8rd. thd., R-2 American casing. Landed 13.00' below RKB, 10' off bottom. Cemented with 700 sacks of Ideal regular cement with 2 percent $CaCl_2$. Clean cement to surface. Plug down at 1:30 P.M., 9-13-55. Released pressure. Float held OK. Bumped plug with 1000#.

Approved U. S. G. S. 9-19-55

Approved subject to conditions on reverse of form

Date 9-24-55

By Mark P. Hurley Dist. Eng.
Title
District Office Agent

Company MURPHY CORPORATION

By Harold D. Milam
Harold Milam
Title Division Production Superintendent

Address 602 Midland National Bank Bldg.

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

16M--5-55

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

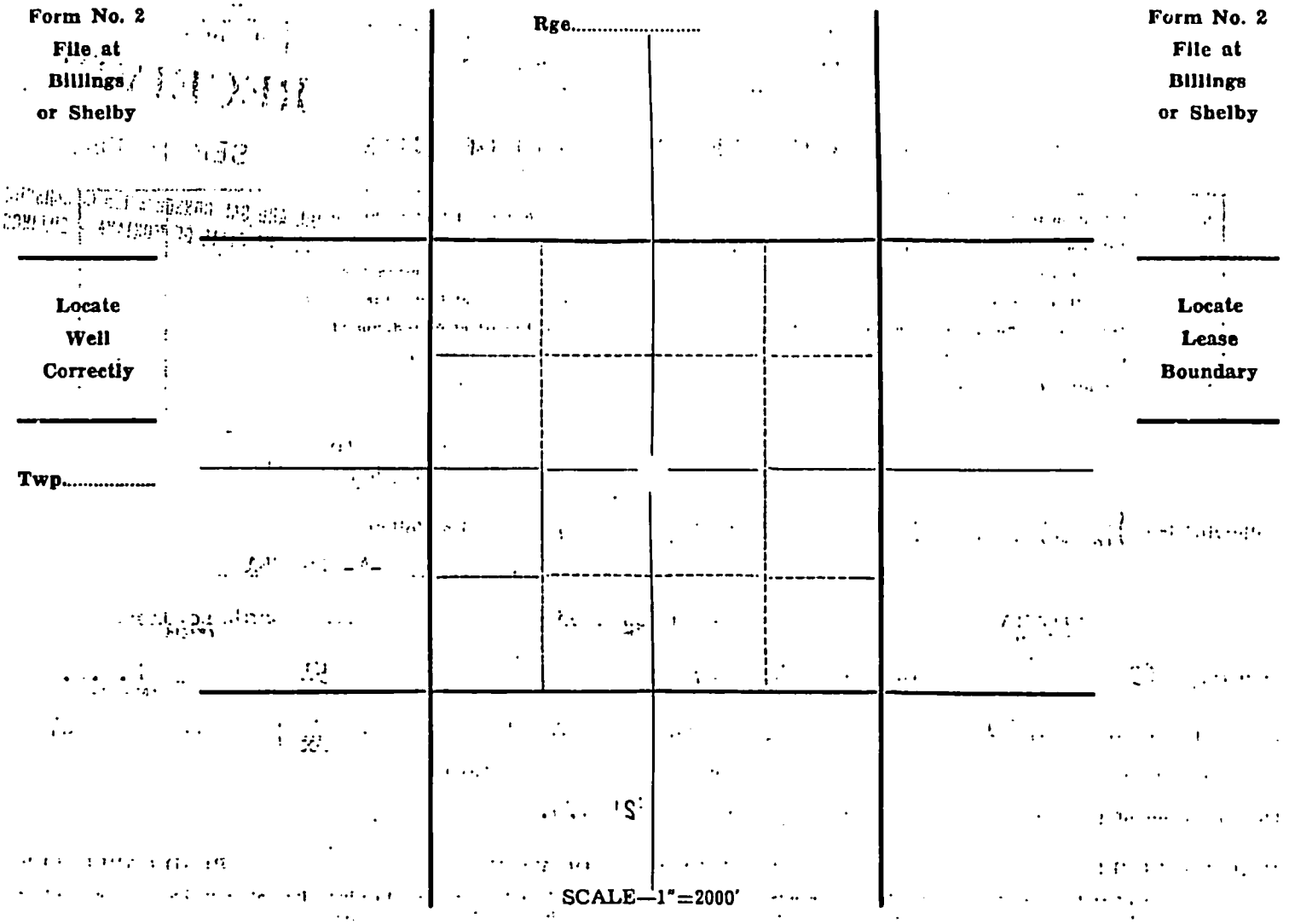
Rge.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....



THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
OCT 27 1955
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

October 26, 19 55

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BLM-A 029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~S~~} North line and 1980 ft. from {E / ~~W~~} East line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Drill stem test record to date attached.

Approved subject to conditions on reverse of form

Date 10-29-55

By Mark P. Hurley Dist. Eng
Title
District Office Agent

Company MURPHY CORPORATION

By J. D. Laughlin

Title Assistant Division Manager

Address 602 Midland Bank Bldg, Billings

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

15M--5-55

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

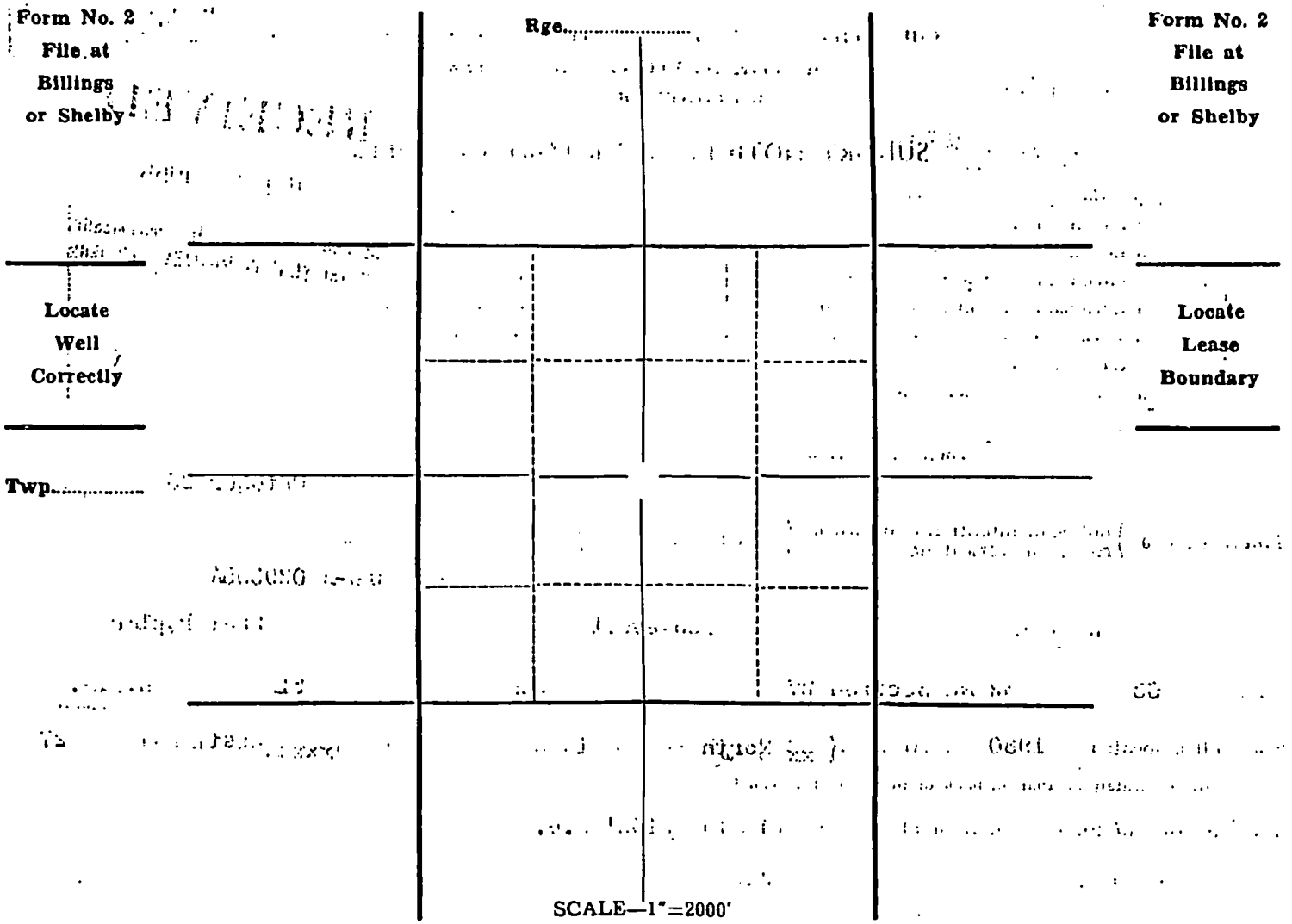
Rge.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 3

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
JAN 4 1956
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

December 30, 1955

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BLM-A 029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE (m. sec.) Section 27 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~S~~} Northline and 1980 ft. from {E / ~~W~~} E line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Report of work performed to date attached.

Approved N.S.G.S. 1-4-56

Approved subject to conditions on reverse of form

Date 1/5/56

By John R. Hogg Supv
Title
District Office Agent

Company MURPHY CORPORATION

By Harold Milam
Harold Milam
Title Division Production Superintendent

Address 602 Midland Bank Bldg., Billings, Mont.

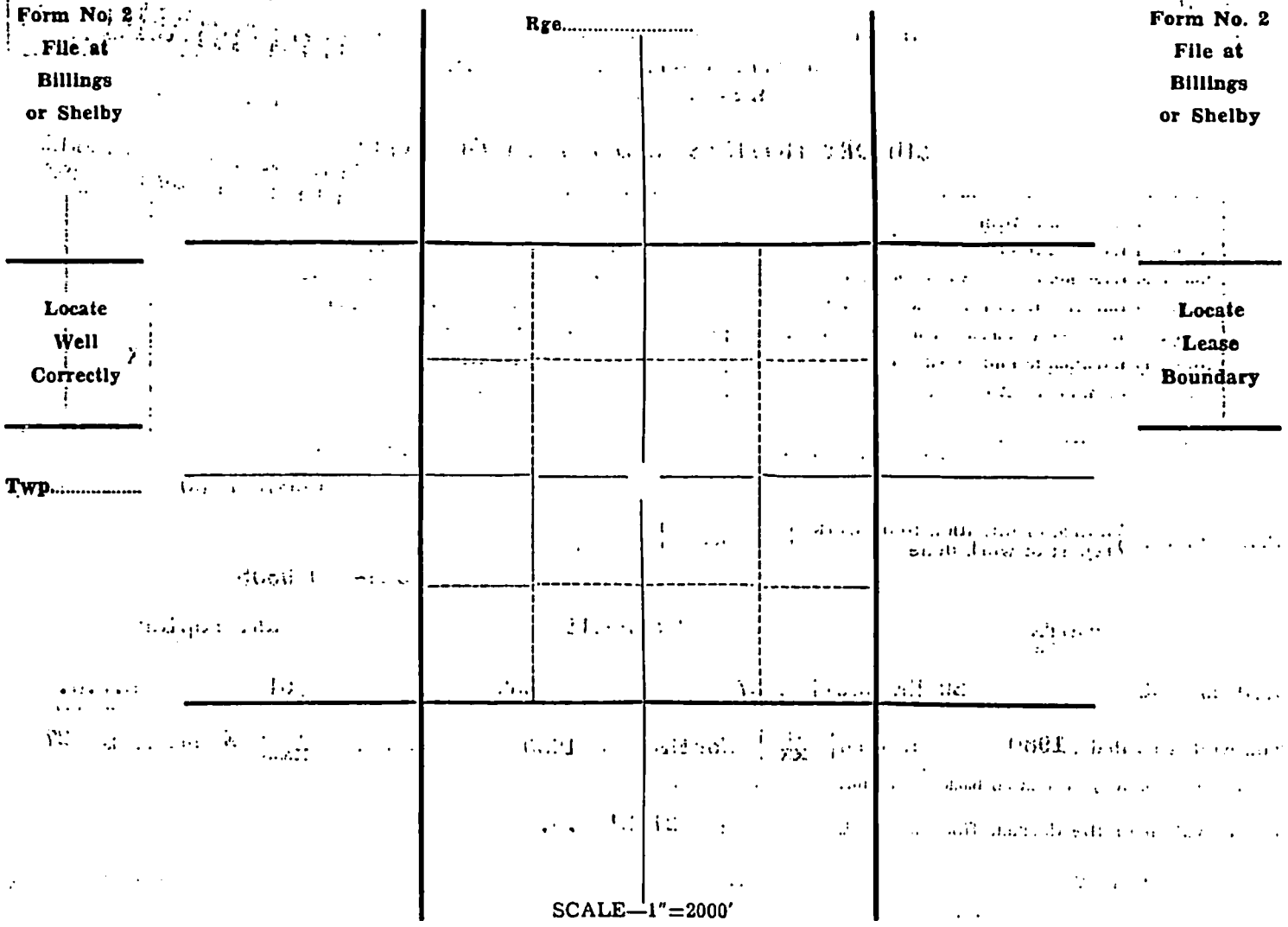
NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

15M--5-55

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.



THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
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9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

814

AUG 21 1957

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Notice of Intention to Pump Test	XX		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 15, 1957

Following is a {notice of intention to do work / ~~report on work done~~} on land {~~owned~~ / leased} described as follows:

LEASE BIM -A 029305A

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~S~~} line and 1980 ft. from {E / ~~W~~} East line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

EPU No. 63 was temporarily abandoned on November 8, 1956. Will pump test the Kibbey Sandstone in order to further evaluate the possibility of commercial production.

RECEIVED

AUG 19 1957

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA • BILLINGS

Approved subject to conditions on reverse of form

Date 8-20-57

By [signature]
Title
District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

Rge. 51E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 28N

27

SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
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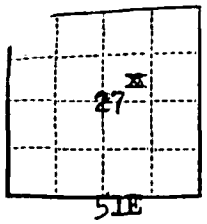
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Billings
Lease No. BIM-A 029305A
Unit East Poplar Unit

SUNDRY NOTICES AND REPORTS ON WELLS

RECEIVED
AUG 19 1957
U.S. GEOLOGICAL SURVEY
BILLINGS, MONTANA

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIRING	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			
Notice of Intention to Pump Test	X		

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE OR OTHER DATA)

COPY RETAINED DISTRICT OFFICE

August 15, 195719

Well No. 63 is located 1980 ft. from {N / S} line and 1980 ft. from {E / W} line of sec. 27

SW NE Section 27 (¼ Sec. and Sec. No.) 28N (Twp.) 51E (Range) M.P.M. (Meridian)

East Poplar Unit (Field) Roosevelt (County or Subdivision) Montana (State or Territory)

The elevation of the derrick floor above sea level is 2162 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

EPU No. 63 was temporarily abandoned on November 8, 1956. Will pump test the Kibbey Sandstone in order to further evaluate the possibility of commercial production.

Approved AUG 19 1957
District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company MURPHY CORPORATION

ACQUIRED LAND LEASE

Address P. O. Box 447

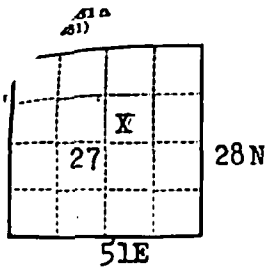
Poplar, Montana

By [signature]

Title Field Production Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—8437-C

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Billings
Lease No. BIM-A-029305-A
Unit East Poplar

RECEIVED
DEC - 5 1957
U.S. GEOLOGICAL SURVEY
BILLINGS, MONTANA

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL Temporarily X			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

COPY RETAINED DISTRICT OFFICE

December 2, 19 57

Well No. 63 is located 1980 ft. from {N/S} line and 1980 ft. from {E/W} line of sec. 27

SW NE Sec. 27 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | MPM (Meridian)

East Poplar (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

RECEIVED
DEC - 9 1957
U.S. GEOLOGICAL SURVEY
CASPER, WYOMING

The elevation of the derrick floor above sea level is 2162 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Pump tested the Kibbey Sandstone During the months of August, September, October, and November, 1957. Averaged 7 BOPD and 53 BWPD.

Temporarily abandoned. December 13, 1957

Approved DEC - 5 1957

District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address Box 447

Poplar, Montana

By M. H. Jones

Title Field Production Superintendent

GPO 9 18 507

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

DEC 9 - 1957

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well Temporarily	XX	Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

December 2, 19 57

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BIM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. E.P.U. No. 63 SW NE (m. sec.) Sec. 27 28N (Township) 51E (Range) MPM (Meridian)

The well is located 1980 ft. from {N} line and 1980 ft. from {E} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162 KB

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Pump tested the Kibbey Sandstone during the months of August, September, October and November, 1957. Averaged 7 BOPD and 53 BWPD.

Temporarily Abandoned. December 13, 1957

RECEIVED
DEC 5 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form U.S.G.S. Approved 12-5-57

Date 12-6-57

By John C. Hoffland
Title
District Office Agent

Company Murphy Corporation

By M. H. Johnson

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

Rge. 52E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 28N

27

SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

orm No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
MAR 14 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well	XX	Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

March 2, 1960

Following is a {notice of intention to do work / ~~report of work done~~} on land {~~homestead~~ / leased} described as follows:

LEASE BLM-A-029305-A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE, Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~S~~} line and 1980 ft. from {E / ~~W~~} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162 KB

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See attached sheet.

RECEIVED
MAR 11 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA • BILLINGS

Approved subject to conditions on reverse of form 3-7-60

Date 3-11-60

By [signature] Title

District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

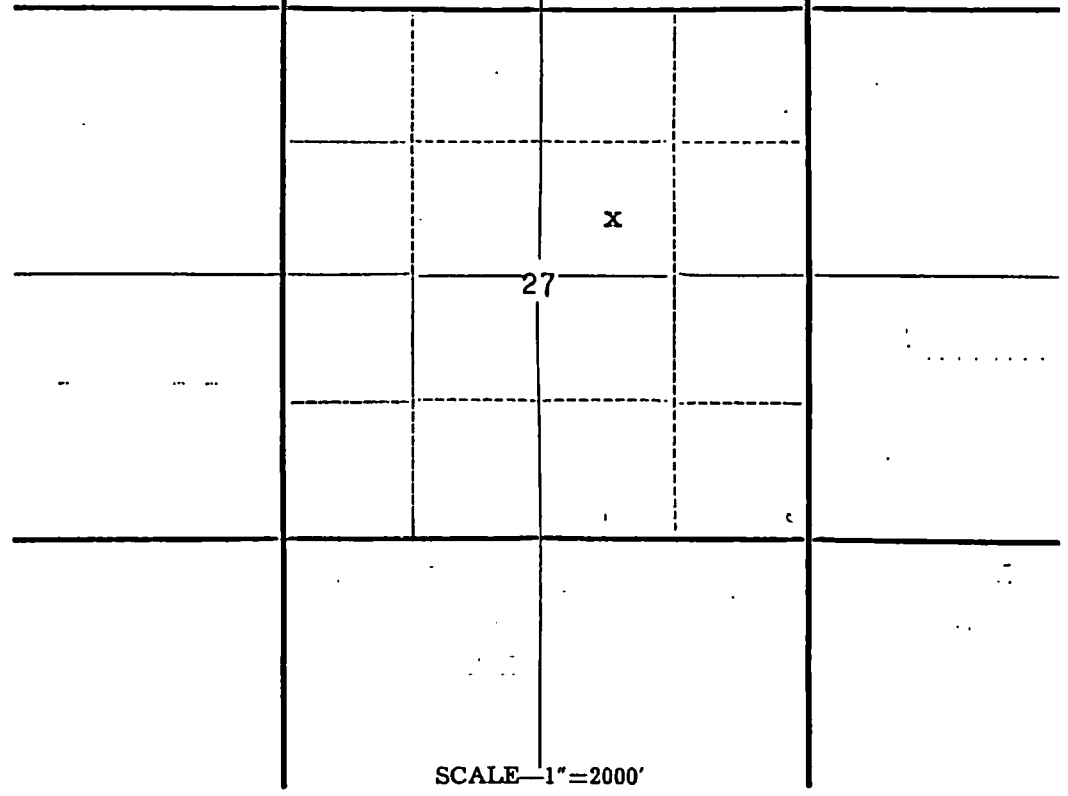
Rge.....51E.....

Form No.
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....28N.....



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
JUL 15 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	XX	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 8, 1960, 19

Following is a {notice of intention to do work} on land {owned / leased} described as follows:

LEASE BLM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N} line and 1980 ft. from {E} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Drill out packer, 5345' and 5553'. Perforate the "B" Zone, 5788'-5894'; Acidize and test with retrievable packer.

RECEIVED
JUL 11 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form 7-11-60

Date 7-12-60

By J. Keith Ridge Supt
Title
District Office Agent

Company MURPHY CORPORATION

By W. J. Jarrard

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

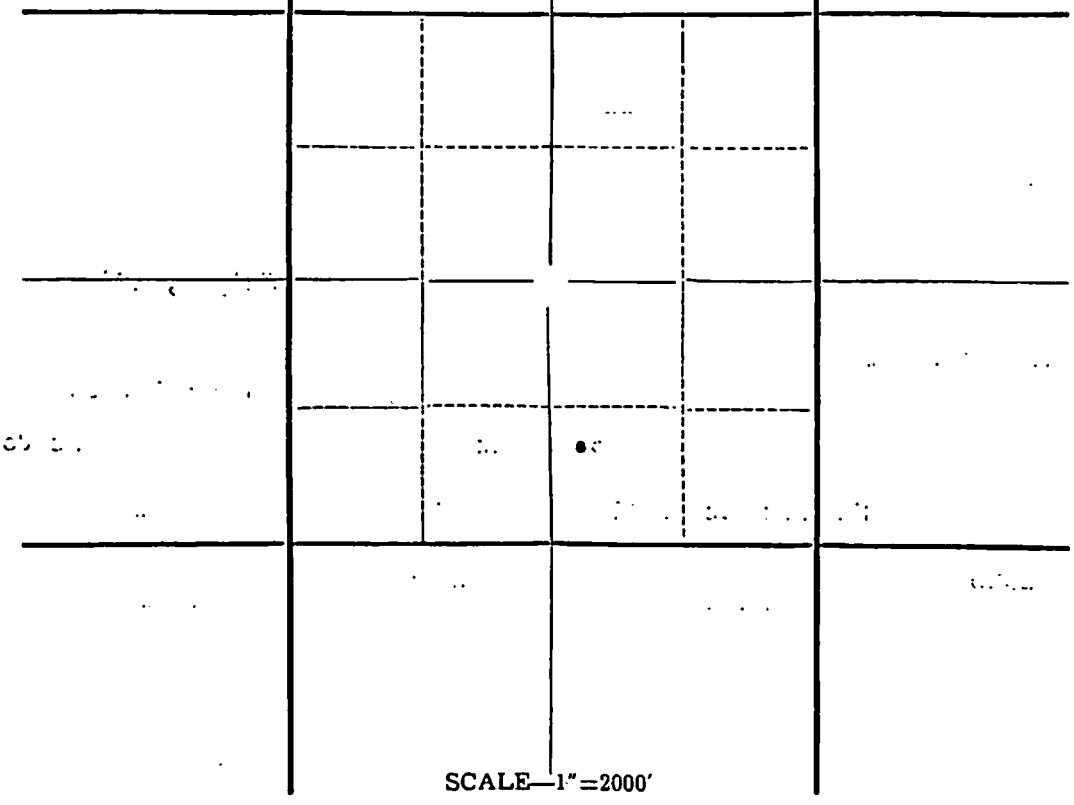
Rge.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

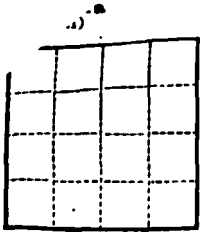
1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office /Billings
Lease No. BLM-A-289305A
Unit East Poplar

Ref. 35

U. S. GEOLOGICAL SURV.
RECEIVED
JUL 11 1960
BILLINGS, MONTANA



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	XX	SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

July 8, 1960

Well No. 63 is located 1980 ft. from {N / S} line and 1980 ft. from {E / W} line of sec. 27

SW NE Section 27 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | M.P.M. (Meridian)

East Poplar (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

The elevation of the derrick floor above sea level is ..... ft.

COPY RETAINED DISTRICT OFFICE

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Drill out packer 5345' and 5553'. Perforate the "B" Zone 5788'-5894'; Acidize and test with retrievable packer.

Approved JUL 11 1960

(Date) Hillary E. Allen

ACTING District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company MURPHY CORPORATION

Address P. O. Box 547

Poplar, Montana

By [signature]

Title Field Production Superintendent

U. S. GOVERNMENT PRINTING OFFICE: 1958 O -463339

Form No. 2
GENERAL RULES
204, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
SEP 23 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	XX

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 12, 1960

Following is a { ~~Notice of Intention to do work~~ / report of work done } on land { ~~owned~~ / leased } described as follows:

LEASE BLM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE (m. sec.) Section 27 (Township) 28N (Range) 51E (Meridian) M.P.M.

The well is located 1980 ft. from { N / ~~XXXX~~ } line and 1980 ft. from { E / ~~XXXXX~~ } line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162'

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

SEE ATTACHED SHEETS.

RECEIVED
AUG 19 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

U.S.G.S. approved 8-15-60
Approved subject to conditions on reverse of form

Date 9-21-60

By John L. Hogg
Title
District Office Agent

Company MURPHY CORPORATION

By W. T. Lewis

Title Field Production Superintendent

Address P. O. Box 547, Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

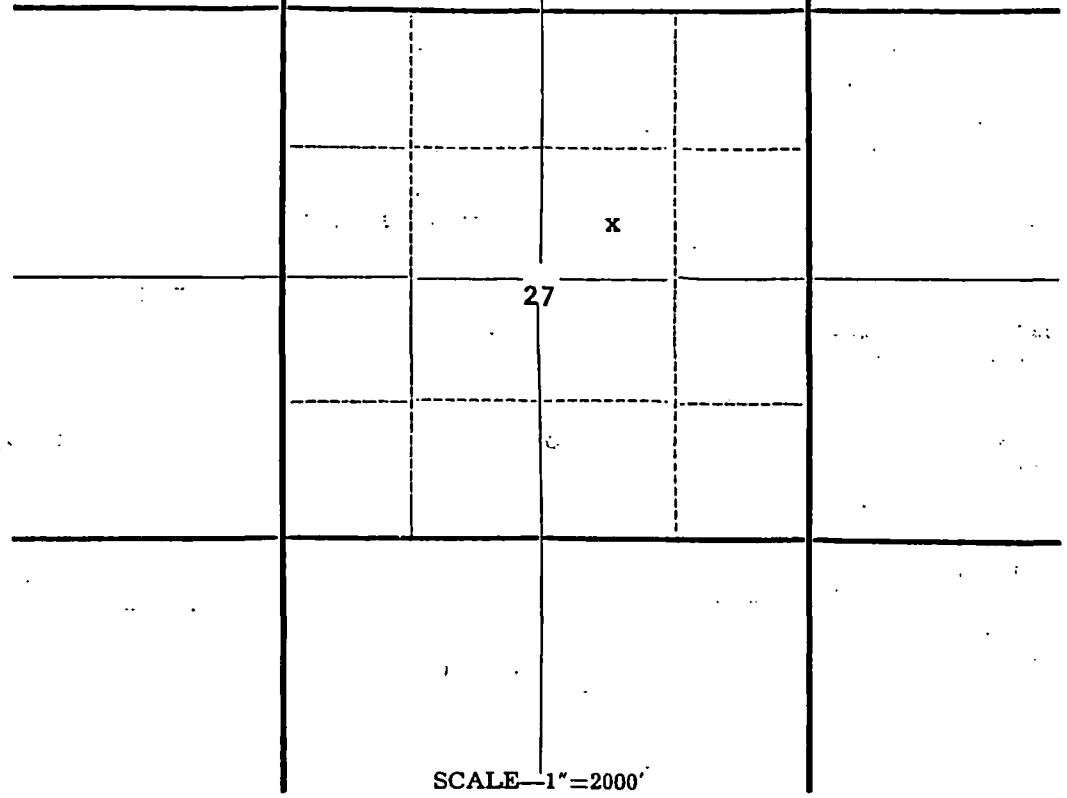
Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

Rge.....51E.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly



Locate
Lease
Boundary

Twp...28N.....

SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

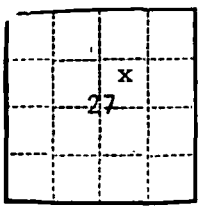
Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office ~~Billings~~ BLM-A

Lease No. ~~B-0144~~ 029305-A

Unit East Poplar

Ref. 35



U. S. GEOLOGICAL SURVEY
RECEIVED
MAY 1 1962
BILLINGS, MONTANA

(SUBMIT IN TRIPLICATE)

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL & Plug	X		

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

May 1, 1962

Well No. 63 is located 1980 ft. from {N/~~S~~} line and 1980 ft. from {E/~~W~~} line of sec. 27

SW NE Section 27 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | M.P.M. (Meridian)

East Poplar (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

The elevation of the derrick floor above sea level is 2162 ft. K.B.

DETAILS OF WORK

COPY RETAINED DISTRICT OFFICE

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

The hole is to be loaded with 10 - 10.2# mud ~~or heavy salt water~~. The Kibbey Sandstone perforations to be plugged with a 25 sack plug (222'). The top and bottom of the 9 5/8" surface casing will be plugged and a 4" steel post marker cemented in and capped in accordance with the regulations prescribed by the Montana Oil & Gas Commission and the United States Geological Survey.

NOTE: 20 sack cement plug to be placed across stub of 5½" casing.

MAY 2 1962

District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address P. O. Box 547

Poplar, Montana

By

Title Field Production Supt.

GPO 862040

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
SEP 11 1962
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	XX
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 10, 1962

Following is a { ~~notice of intention to do work~~ / report of work done } on land { ~~owned~~ / leased } described as follows:

LEASE BLM-A-029305-A

MONTANA (State) Roosevelt (County) Montana (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from { ~~N~~ / ~~S~~ } line and 1980 ft. from { ~~E~~ / ~~W~~ } line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

RECEIVED

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

5-18-62
MI & RU plg unit. Picked up 2 jts of 2 3/8" tbg & tagged btm at 5848'. Disp oil and Sw 10.2 to 10.4# w/mud. Plgd perfs (B-4 - 5783-93', B-5 5809-27' and Kibbey Sand stone 5231-43') as follows:
Plug #1 5783-5575' w/ 25 sacks.
Plug #2 5231-5021' w/25 sacks.
Cut and pld 3964' of 5 1/2" Cond. 2 csg. Set 25 sack cmt plug at 3964' on top of 5 1/2" csg. stub. Plgd btm of 9 5/8" surface csg. w/25 sk. plg. Set 10 sk. cmt plg at top of surface csg and cmtd in a 4" steel post marker in accordance w/the regulations of the Montana Oil and Gas Conservation Commission and United States Geological Survey.

U.S.G.S. approved 9/29/62
Approved subject to conditions on reverse of form

Date Sept 10, 1962

By C M Watkins
Title
District Office Agent

Company Murphy Corporation

By M H Jamison

Title Field Production Supt.

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

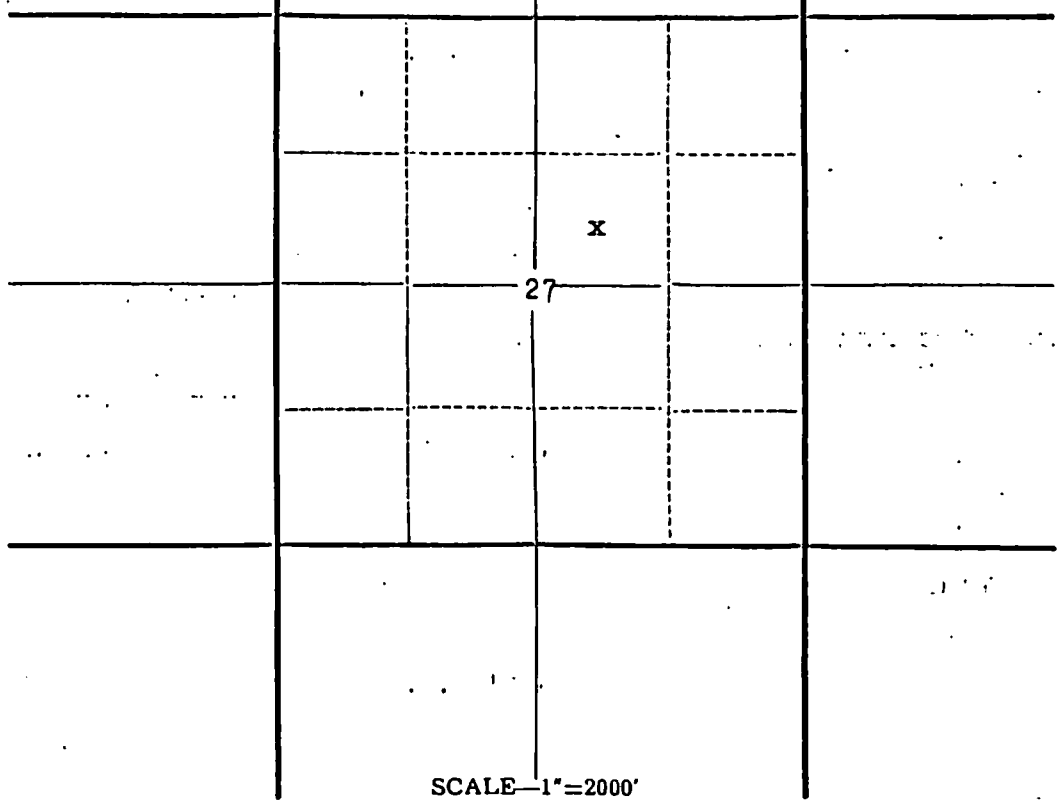
Rge. 51E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 28N



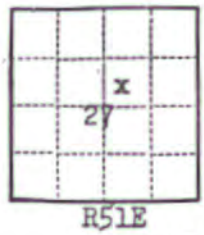
SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form 9-331 a
(Feb. 1951)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MONTANA OFFICE

Land Office BLM-A
Lease No. 029305-A
Unit East Poplar

T&P-35

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	XX
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

August 13, 19 62

Well No. 63 is located 1980 ft. from {N/S} line and 1980 ft. from {E/W} line of sec. 27

SW NE Section 27 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | M.P.M. (Meridian)

East Poplar (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

The elevation of the derrick floor above sea level is 2162 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

5-18-62
MI & Ru plug unit. Picked up 2 jts of 2 3/8" tbg & tagged btm at 5948'. Disp oil and SW 10.2 to 10.4# w/mud. Plgd perfs (B-4 - 5783-93, B-5 5809-27' and Kibbey Sand stone 5231-43') as follows:
Plug #1 5783-5575' w/25 sacks.
Plug #2 5231-5021' w/25 sacks.
Cut and pld 3964' of 5 1/2" Cond. 2 csg. Set 25 sx cmt plug at 3964' on top of 5 1/2" csg stub. Plgd btm of 9 5/8" surface csg w/25 sack plug. Set 10 sx cmt plug at top of surface csg and cmtd in a 4" steel post marker in accordance w/the regulations of the Montana Oil and Gas Conservation Commission and United States Geological Survey.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address P. O. Box 547

Poplar, Montana

Hillary A Oden

Inspected 8-29-62 OK

By M L James

Title Field Production Supt.

GPO 8 6 2 0 4 0

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	X
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 28, 1976

Following is a report of work done on land leased described as follows:

LEASE East Poplar Unit No. 67

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 67 SE NE Section 9 (m. sec.) T28N (Township) R51E (Range) MPM (Meridian)

The well is located 1976 ft. from N line and 660 ft. from E line of Sec. 9

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2044' G.L.

READ CAREFULLY **DETAILS OF PLAN OF WORK** READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

This well was plugged and abandoned as follows:

A bridge plug was set at 4707' with a 10' cement plug on top. The casing was cut off at approximately 3212'. A 200' plug was set at the casing stub and also covered the Dakota Sand at 3123'. A 100' cement plug was set at the bottom of the 9-5/8" surface casing, 1/2 in and 1/2 out. A 10' cement plug was set at the top of the surface casing. The surface casing will be cut off 4' below ground level and a steel cap welded on the top of the 9-5/8" casing. No dry hole marker is to be erected on this location.

Surface restoration should be completed by November 1, 1976.

LOG RECEIVED
REMOVED FROM WELL CARD 10-7-76

Approved subject to conditions on reverse of form

Date OCT 6 1976

By Claire F. Humphrey Supervisor
District Office Agent Title

(LOCATION INSPECTED & APPROVED)

Company Murphy Oil Corporation

By Brien D. Melear

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER
25 (STATE) (COUNTY) (WELL)

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

2

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well	X	Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 27, 19 76

Following is a {notice of intention to do work} on land {leased} described as follows:

LEASE East Poplar Unit No. 67

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 67 SE NE Section 9 (m. sec.) T28N (Township) R51E (Range) MPM (Meridian)

The well is located 1976 ft. from {N} line and 660 ft. from {E} line of Sec. 9

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2044' G.L.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

It is proposed to plug and abandon this well as follows:

Set a bridge plug with wireline at 4700' with a 10' cement plug on top.
Cut 5-1/2" casing off at approximately 3600' and set a 50 sack cement plug at top of casing stub.
Set a 100' cement plug at the top of the Dakota Sand, 3123'.
Set a 100' cement plug (50' in and 50' out) at bottom of 9-5/8" surface casing.
Set a 10' cement plug at top of surface casing. The surface casing will be cut off 4' below ground level and a steel cap welded on top of the 9-5/8" casing.
No dry hole marker is to be erected.

Approved subject to conditions on reverse of form

Date AUG 4 1976

By Glenn L. Knowles Supervisor
District Office Agent Title

Company MURPHY OIL CORPORATION

By Brent L. Miller

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

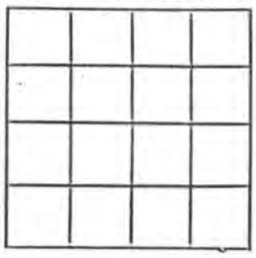
WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

2

MURPHY EPU 63

LOCATE WELL CORRECTLY



Form No. 4
(Gen. Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

814

LOG OF WELL

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

Company Murphy Corporation Lease E.P.U. (BIM-A 029305A) Well No. 63

Address 602 Midland Bank Bldg, Billings, Montana Field (or Area) East Poplar

The well is located 1980 ft. from (N) line and 1980 ft. from (E) line of Sec. 27

Sec. 27 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2162' K.B.
(D.F., R.B. or G.L.)

Commenced drilling September 11, 1955; Completed February 8, 1956

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as oil well
(oil well, gas well, dry hole)

Signed Harold Milam

Title Division Production Superintendent

Date February 22, 1956

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From 5231' to 5243' O Kibbey Sandstone
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____

RECEIVED
FEB 24 1956
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
10-3/4"	40.50#	H-40 & J-55	8	1062.01'			750	
5-1/2"	15.50#	J-55	8	5945.00'			350	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2-3/8"	4.70#	EUE	8	5233.15'	open ended

COMPLETION RECORD

Rotary tools were used from 0 to 8521'
Cable tools were used from -- to --
Total depth 8521' ft.; Plugged back to 5913' T.D.; Open hole from -- to --

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5231'	5243'	1/2" Jet	5231'	5243'	294 gallons mud acid	2450#
See attached sheets for other perforations that have been plugged off.						

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from Kibbey (pool) formation.

I. P. 54 barrels of oil per 24 hours flowing
(pumping or flowing)

neg. Mcf of gas per -- hours.

-0- barrels of water per 24 hours, or -- % W.C.

5M—5-55

(OVER)

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)

Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in

Casing _____ psi flowing; _____ psi shut-in

Gravity 36.8 ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
			See attached					

LOGS RUN

Type	Intervals From	Intervals To
See attached		

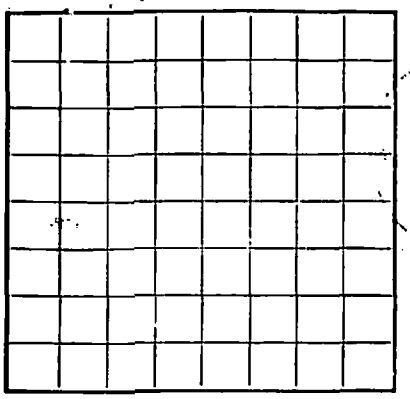
FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		See attached	

Form 9-330

Budget Bureau No. 42-R-355.3.
Approval expires 12-31-55.

U. S. LAND OFFICE Billings
SERIAL NUMBER BLM-A 029305A
LEASE OR PERMIT TO PROSPECT



LOCATE WELL CORRECTLY

RECEIVED FEB 24 1956 U.S. GEOLOGICAL SURVEY BILLINGS, MONTANA

Rq # 35

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FEB 28 1956

LOG OF OIL OR GAS WELL

Company Murphy Corporation Address 602 Midland Bank Bldg, Billings, Mont.

Lessor or Tract E.P.U. (BLM-A 029305A) Field East Poplar State Montana

Well No. 63 Sec. 27 T. 28N R. 51E Meridian M.P.M. County Roosevelt

Location 1980 ft. {N./S.} of North Line and 1980 ft. {E./W.} of East Line of Section 27 Elevation 2162' K.B.
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Harold E. Miller

Date February 22, 1956 Title Division Production Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling September 11, 19 55 Completed February 8, 19 56

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

COPY RETAINED DISTRICT OFFICE

No. 1, from 5231' to 5243' No. 4, from ____ to ____

No. 2, from ____ to ____ No. 5, from ____ to ____

No. 3, from ____ to ____ No. 6, from ____ to ____

IMPORTANT WATER SANDS

No. 1, from ____ to ____ No. 3, from ____ to ____

No. 2, from ____ to ____ No. 4, from ____ to ____

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
10-3/4"	40.50#	8	H-40 & J-55	1049.01'	Howco				Surface
5-1/2"	15.50#	8	J-55	5832.25'	Howco		5231'	5243'	Oil String
See attached sheets for perforations that have been plugged off.									

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
10-3/4"	1062.01'	700	Pump & Plug		
5-1/2"	5945.00'	350	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ____ Length ____ Depth set ____

Adapters—Material Size

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)

Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in

Casing _____ psi flowing; _____ psi shut-in

Gravity 40.4 ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
			SEE ATTACHED					

LOGS RUN

Type	Intervals	
	From	To
SEE ATTACHED		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		SEE ATTACHED	

DETAILS OF WORK

EPU #63 -

Hole to be loaded with 10-10.2# mud. Kibbey Sandstone perforations (5231'-43') to be plugged with a 25 sack plug (222'). Top and bottom of 9 5/8" to be plugged.

This well was completed in the Kibbey Sandstone on February 8, 1956, through perforations 5231'-43'. Initial potential was 54 BOPD, no water, flowing. The flowing life was short and after pumping equipment was installed, the production declined rapidly. Production increased after a stimuli with a small shot of acid and a sand-oil frac, but again decreased rapidly down to 11 BOPD, 92% water, at which time the well was temporarily abandoned.

Attempts were made to complete in the following intervals before being completed in the Kibbey Sand:

"C" Zone	5875-5885
"A" Zone	5570-5575
Kibbey Lime	5354-5360.

There are no other known possible producing intervals.

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OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

COMPLETION DATA

CASING: Ran 29 jts. 958.83' of 9-5/8", 36#, J-55, R-2, 8rd. thd., Class A American casing. Landed 9.75' below RKB. Howco float shoe at 968.58'. Two Howco centralizers at 740' and 953'. Cemented with 400 sacks of regular Ideal cement with 2 percent $CaCl_2$. Bumped with 1550#, released pressure, float held ok. Plug down at 12:34 A.M., 10-5-55. Cement to surface. Tested 9-5/8" casing and blow out preventers with 1000#, 30 minutes, held ok.

Ran 173 jts. 5833.50? of 5-1/2", 15.50#, J-55, R-2 and R-3, 8rd. thd., Class A American casing. Landed 8.50' below RKB at 5842'. Howco differential fillup shoe on bottom. Howco baffle collar at 5817.47'. 5 Weatherford spiral centralizers at 5835', 5778', 5666', 5608', and 5513'. 47 Weatherford reciprocating scratchers from 5391'-5842'. Reciprocating scratchers from 5391' to 5842'. Reciprocated pipe 30' to 40' while circulating 30 minutes and during cementing. Cemented with 300 sacks Slo-set cement with 2 percent gel. Plug down at 3:26 P.M., 10-26-55. Bumped plug with 1300 PSI, released pressure, float held ok.

COMPLETION: Rig released at 9:00 A.M., 10-27-55. Moved in pulling unit to complete. Ran 2-7/8", EUE, 6.50#, J-55, 8rd. thd. tubing...

Landed below RKB	7.00
Top joint	31.19
181 joints	5614.95
Bottom of tubing	5654.14'.

Washed down to solid bottom 5797'. Perforated "B-2" Zone 5639'-5644' with Schlumberger 2-1/8" tubing gun, 4 shots per foot. Acidized "B-2" Zone 5639'-5644' with 500 gallons Dowell etching acid. Maximum injection pressure 2100#, injection rate .4 BPM. Bleed down pressure 1000#. Opened to pit, flowed small stream for 3 hours and 30 minutes, died.

Swabbing record--

8 hours, rate last 2 hours, 131 BOPD, 197 BWPD, 60% water,
8 hours, rate last 1 hour, 98 BOPD, 326 BWPD, 77% water.
Shut in 14 hours, swabbed 245 bbls. fluid, 10 hours, 171 bbls. water, 74 bbls. oil.

Ran rods and set pumping unit.

Pumping record--

Pumped 476 BFPD, 81% water, 90 BOPD, 386 BWPD.
Pumped 336.64 BFPD, 70% water, 101 BOPD, 235 BWPD.
Pumped 291 BFPD, 75% water, 73 BOPD, 218 BWPD.
Pumped 280 BFPD, 56% water, 123 BOPD, 157 BWPD. (Initial potential).

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	968'-5842'
Schlumberger Microlog 5"	968'-5842'
Schlumberger Gamma Ray-Neutron 2"	100'-5764'
Schlumberger Gamma Ray-Neutron 5"	4720'-5764'
Schlumberger Temperature Log	0'-928'

LOG TOPS

Niobrara	1993 (+ 61)	
Greenhorn	2333 (- 279)	
Graneros	2533 (- 479)	
Muddy	2902 (- 848)	
Dakota Silt	3128 (-1074)	
Morrison	3510 (-1456)	(?)
Swift	3580 (-1526)	(?)
Vanguard	3902 (-1848)	
Rierdon	4084 (-2030)	
Piper Shale	4253 (-2199)	
Piper Limestone	4339 (-2285)	
Gypsum Springs	4390 (-2336)	
Spearfish	4610 (-2556)	
Amsden	4711 (-2657)	
Heath	4810 (-2756)	
Otter	4955 (-2901)	
Kibbey Sandstone	5114 (-3060)	
Kibbey Limestone	5263 (-3209)	
Madison	5354 (-3300)	
"A" Zone	5488 (-3434)	
"B-1" Zone	5620 (-3566)	
"B-2" Zone	5640 (-3586)	
"C" Intercrystalline	5772 (-3718)	

18' of salt between "A" Zone and "B-1" Zone

COMPLETION DATA

CASING: Ran 34 jts. 1049.01' of 10-3/4", 40.50#, H-40 and J-55, 8rd. thd., R-2, American casing. Landed 13.00' below RKB, 10' off bottom. Cemented with 700 sacks of Ideal regular cement with 2 percent $CaCl_2$. Clean cement to surface. Plug down at 1:30 P.M., 9-13-55. Released pressure, float held ok. Bumped plug with 1000#.

Ran 186 jts. 5932.25' of 5-1/2", 15.50#, J-55, 8rd. thd., R-2, American Class A casing. Landed 12.75' below RKB at 5945'. Ran Howco differential fillup shoe on bottom and Howco baffle collar at 5916'. Ran 1056' of Weatherford scratchers from 4889' to 5945'. Ran 12 Weatherford centralizers at 5937', 5874', 5772', 5708', 5578', 5450', 5634', 5299', 5246', 5215', 5074', and 4966'. Cemented with 350 sacks of Slo-set cement with 2 percent gel. Reciprocated pipe 35'-40' while circulating 1 hour and 9 minutes and while cementing 56 minutes. Bumped plug with 2700 PSI, relief valve sheared but line plugged. Released pressure, float held. Plug down at 8:40 P.M., 12-8-55. Set slips.

COMPLETION: 8521' T.D., plugged back to 5946' prior to setting 5-1/2" casing as follows:

Plug #1 8310'-8182' with 75 sacks,
Plug #2 7394'-7266' with 50 sacks,
Plug #3 6380'-6302' with 25 sacks,
Plug #4 6060'-5903' with 60 sacks.

Tagged bottom, found bottom with open end drill pipe at 5939', conditioned mud, made trip for bit, circulated out to PBTD at 5946'. Ran and cemented casing as noted above. Ran temperature survey and found cement top at 4700'. Ran Gamma Ray Neutron log from 4800' to 5913'. Picked up tubing, circulated out mud with water. Tested tree to 2000 PSI. Reversed out water with oil.

Tubing record--

2-3/8" EUE, 8rd. thd., American Class A tubing, 200 jts. 5896'

Landed below RKB	11.60
Top joint	31.51
1 sub spaced 2 jts. down	10.11
197	5827.11
Seating nipple at 4007'	.75
	5881.08

Perforated "C" Zone 5875'-5885' using Lane Wells swing jet with 4 jets per foot, 40 shots. Acidized "C" Zone with 500 gallons Dowell etching acid. Broke formation with 1600 PSI with 21 gallons of acid in formation. Broke back to 1050 PSI. Pumped 21 gallons at 1050 PSI at rate of 1/2 BPM, let stand 1 minute, bled back to 600 PSI. Resumed injection at 1/2 BPM at 1050 PSI. Injected 42 more gallons. Total acid in formation 84 gallons. Opened to pit, flowed small stream of load oil. Acid to surface in 2 hours 15 minutes. Spent acid 45 minutes later.

Clean oil 20 minutes later. Flowed small stream and headed clean oil for 1 hour and 20 minutes. Reversed circulated with oil to clean tubing, circulated out oil, water, and small amount of acid. Put well to test tank. Flowed 25 barrels, load oil 7 hours. TFP--0#, CP at end of 7 hours 800#. Flowed 7 barrels fluid 3 hours, 75% water, TFP--0#, CP--800#. Swabbed 9 hours, recovered 115 barrels total fluid, last 2 hours swab rate 6 BFPH, 50% water, fluid level 3800'. Swabbed 8½ hours, recovered 123 barrels total fluid, last 2 hour swab rate 10 BFPH, 50% water. Pulled tubing, spaced seating nipple at 4007', pin collar at 4070'.

Released rig at 11:00 P.M., 12-14-55. Set portable pumping unit to continue testing.

Tested as follows:

12-24-55: 10 hour test, pumped at the rate of 117 BFPD, 98% BS&W.
12-25-55: Did not make enough oil to flow out of gun barrel, salt water drained off water leg. Drained gun barrel.
12-27-55: 18 hour test, pumped at the rate of 114 BFPD, 80% BS&W.
12-28-55: 4 hour test, pumped at the rate of 104.60 BFPD, 82% BS&W.
12-29-55: 8 hour test, pumped at the rate of 39.2 BFPD, 85% BS&W.
12-30-55: 24 hour test, pumped at the rate of 28.46 BFPD, 85% BS&W.
1-1-56: 12 hour test, pumped at the rate of 160.50 BFPD, 99% BS&W.
1-2-56: 4½ hour test, pumped at the rate of 143 BFPD, 96% BS&W.
1-3-56: Ran sonic well sounder, found fluid level 130 jts. down at 4030', barrel spaced at 4007'.
1-4-56: Pumped 160 BFPD, 95% BS&W.
1-5-56: 4 hour test, pumped at the rate of 111 BFPD, 95% BS&W.
21 hour test, pumped at the rate of 88 BFPD, 96% BS&W.
1-7-56: 15 hour test, pumped at the rate of 46 BFPD, 97% BS&W.
1-8-56: Pumped 123 BFPD, 96% BS&W.
1-9-56: 17 hour test, pumped at the rate of 111 BFPD, 96% BS&W.
1-10-56: 16 hour test, pumped at the rate of 68 BFPD, 95% BS&W.
1-11-56: 24 hour test, pumped at the rate of 85 BFPD, 97% BS&W.
1-12-56: Pumped 100 BFPD, 96% BS&W.
1-13-56: 24 hour test, pumped at the rate of 96 BFPD, 95% BS&W.

Moved in pulling unit to reacidize "C" Zone. Ran tubing and set Howco Model "C" production packer at 5861' with tail pipe to 5870'. Tested packer to 1500 PSI, held ok.

Acidized "C" Zone through perforation 5875'-5885' with 1000 gallons of Dowell etching acid. Injected acid at 4 barrels per minute with 2800 PSI, no formation break, bled back to 1100 PSI. Opened to pit, flowed spent acid to surface in 78 minutes with 1 to 2 percent oil in 132 minutes.

Repaired pulling unit and waited for sinker bars to swab. Flowed well to tank for 1 hour at the rate of 12 BFPH, 98% water. Flowed to pit at approximately the same rate and same water cut.

Swabbed "C" Zone at the rate of 19 BFPH, 95-98 percent water. Squeezed "C" Zone perforation 5875'-5885' (through Halliburton Model "C" production packer, set at 5859') with 100 sacks of Slo-set cement. Staged last 18 sacks, 6 stages 5 to 10 minutes, to pressure up, maximum pressure 1600#, held. Picked up tubing 40' and reversed out, left 7 sacks cement on top of packer, no cement flag to surface. Job complete at 5:30 P.M., 1-18-56. Let set 14 hours and pressure tested to 2500# for 30 minutes, held ok.

Perforated "A-1" Zone 5570'-5575' with 22 bullets using Lane Wells type "E" 4" casing gun. Picked up Halliburton Model "C" production packer with junk pusher on bottom. Ran in 67 doubles, 1 single, and packer set at approximately 4187', came out of hole. Moved in pump and motor. Ran tubing with 4-3/4" bit. Rigged up and drilled Halliburton production packer at 4187', packer dropped to bottom of hole after drilling to bottom of slips on packer, left bottom of packer at PBTD 5821', ran sinker bars in tubing to check length of swab line, too short to run junk basket. Spooled on new sand line. Pulled tubing and ran Baker junk basket until hole was clean. Picked up Halliburton Model "C" production packer and set top of packer at 5553'. Swabbed "A-1" Zone, tubing swabbed dry with no show of oil, tested blow out preventers and packer at 1500#, held ok.

Acidized "A-1" Zone through perforations 5570'-5575' with 1000 gallons of Dowell etching acid, formation broke at 2600# and back to 2200#, increased injection rate to 1.5 barrels per minute at a maximum pressure of 2750#, pressure bled down to 2400#, opened well to pit, flowed small stream of load water for 10 minutes. Started swabbing and swabbed spent acid and salt water, started showing oil after fluid level lowered to 3800', swabbed down to 5500'. Made trip with swab every hour, recovered 1½ to 2 BFPH, 60% salt water. Fluid level built up overnight from 5500' to 3400', SITP--100#. Swabbed tubing dry in 20 minutes, obtained 15.3 barrels of water, 2.7 barrels of oil. Swabbed well down every hour, maximum fluid rise per hour 300'. Swabbed 9 hours, total fluid equalled 26.4 barrels, 65-100% water. Tested casing, blow out preventers and packer to 1500 PSI, held ok. Reversed out tubing, set back in to packer. Pressured up on tubing with 1500# back pressure on casing, pressure equalized. Tested manifold. Seal rings apparently leaking. Came out of hole with tubing and replaced mandrel and seal rings. Went back in hole with tubing. Tested packer with 1500# on casing, held ok. Broke formation down with 2100#, broke back to 1900#.

Squeezed "A-1" Zone through perforation 5570'-5575' with 50 sacks of Slo-set cement. Began staging with 30 sacks in formation. Made four 1 to 15 minute stages with 2½ sacks per stage. Maximum pressure 2300#, bled back to 1900#. Did not hold squeeze. Pulled out of packer, released pressure, flapper valve held ok. Had 30 sacks in formation, dropped 5 sacks above packer, and reversed out 5 sacks, came out of hole, put on blind rams. Tested squeeze job to 2500# for 30 minutes, held ok.

Perforated Kibbey Limestone 5354'-5360' with Lane Wells type "E" bullet gun, 6 holes per foot. Ran Baker junk basket to clean hole. Ran Halliburton Model "C" production packer and set at 5345'. Swabbed tubing dry in 2 hours, continued swabbing once each hour. Made three runs, obtained fluid level build up of 300' of first run, no fillup thereafter. No show of oil or gas.

Acidized Kibbey Limestone through perforation 5354'-5360' with 500 gallons of Dowell etching acid. Pressured up to 3000#, broke back to 1700#. Injected acid at 1-3/4 barrels per minute at 1600#, bled down to 1300#. Opened to pit, well flowed small stream for 10 minutes and died. No pressure on tubing. Swabbed tubing dry with 4 trips with swab. Recovered spent acid on 3rd run, well opened 1 hour. Swabbed once each hour, 4 runs. Recovered no fluid build up, no show of oil or gas. Tested packer with 1500# on casing, held ok. Broke formation down at 1800#, back to 1400#. Cemented with 50 sacks of Slo-set cement. Began staging with 30 sacks in formation. Attempted nine 2 to 3 minute stages with 1 sack per stage. Maximum pressure 2600#, bled back to 1800#, did not squeeze. Pulled out of packer, flapper valve held ok. Put 46 sacks in formation, left 2 sacks above packer and reversed out 3 sacks. Tested cement to 2500#, held ok.

Perforated Kibbey Sandstone 5231'-5243' with 4 jets per foot using Lane Wells tubing swing jet gun. Checked top of cement at 5310' Lane Wells. Swabbed tubing dry, ran swab every hour, 3 hours, no fluid recovery. Let set 12 hours. Recovered 25' fluid, no show of oil or gas. Checked chlorides and weight of water. Recovered with swab 87,500 PPM, weight 8.9# per gallon, which compares with load water 9.1# per gallon. Swabbed dry. Loaded hole with salt water. Ran Lane Wells collar locater, picked up old perforations 5231'-5243'.

Reperforated Kibbey Sandstone 5231'-5243' with Lane Wells type "E" gun with 6 bullets per foot. Ran tubing. Swabbed down to 1500', no show of oil or gas, fluid level lowered each trip with swab. Swabbed dry, obtained show of Kibbey oil. Filled hole with salt water.

Acidized Kibbey Sandstone to break mud block with 500 gallons of Dowell mud acid through perforation 5231'-5243', pressured up to 2450#, let set 2 minutes, bled back to 2100#, let set 7 minutes, bled down to 1850#, resumed pumping at 2600#, broke back to 1200#, injected 294 gallons in formation, bled down to 1100#, opened to pit, flowed 1" stream for 5 minutes and died. Swabbed load water, spent acid, and show of oil for 4½ hours and oil percent increased to 5 when fluid level was at 2900', Swabbed to tank for 2½ hours at the rate of 15 BFPH, 10 to 70 percent oil. Shut down for 8 hours, fluid level built up from 4100' to 2100', no pressure on well. Made water draw. 9½ hour test made 55 barrels of fluid, 60 percent water

Began swabbing 100% oil at 9:40 A.M., 2-3-56, and continued throughout the day. Swabbed down from 2100' to 4900' in 13 hours, last 2 hours

swab rate was 6 BFPH, 98% oil. Shakeout from bottom of run fluid contained 98% oil, 1.6% basic sediment, and .4% free water, API gravity at 60 degrees F equals 36.8. Fluid level built up from 4900' to 2000' in 11 hours. Swabbed well down from 4900' to 2000'. Total fluid made in 24 hours equalled 120.21 barrels, 99% oil. Last 1 hour swabbing rate was 7 BFPH, 1% basic sediment. Shakeout from bottom of last run fluid contained 99% oil, 1% basic sediment, and no free water, basic sediment appears to be mud. Put well on 1/4" choke to see if fluid level would build up and flow. Filled tubing and casing in 24 hours. Flowed 29 barrels of clean oil, 13 hours, 1/4" choke, no pressure.

Tubing record--

Top joint	31.49
2 subs	18.16
Below RKB	11.60
166 jts.	5171.90
Total	5233.15

Flowed as follows:

2-7-56: 7 hour test, flowed on 1/4" choke at rate of 66.00 BOPD, .2% basic sediment.
17 hour test, flowed on 1/4" choke at rate of 51.12 BOPD, .2% basic sediment.

2-8-56: 24 hour test, flowed on 1/2" choke at rate of 54.00 BFPD, 1/10 of 1% basic sediment, TFP--0# (initial potential).

2-9-56: 3 hour test, flowed on 12/64" choke at rate of 55.00 BFPD, .4% basic sediment, TFP--50#.

2-10-56: 4 hour test, flowed on 16/64" choke at rate of 55.00 BFPD, .2% BS&W, TFP--40#.

2-11-56: 1-3/4 hour test, flowed on 1/4" choke at rate of 50.88 BFPD, .2% basic sediment, TFP--40#.

Ran bottom hole pressure. Well shut in for 27 hours, TSIP--800#. Bottom hole pressure 2730# at -3000' datum. Bottom hole pressure extrapolated to mid-point of perforations (5237') 2747# at -3075' datum. Bottom hole temperature equals 224 degrees F, no water in bomb. Open for 17 hours, 1/4" choke, flow rate was 53 BFPD, 3/10 of 1% BS&W, TFP--25#, CP--25#

2-15-56: 7 hour test on 16/64" choke, flow rate 47 BFPD, .4% basic sediment, TFP--25#, CP--25#.
17 hour test on 12/64" choke, flow rate 69 BFPD, .4% basic sediment, TFP--90#, CP--90#, total fluid the last 24 hours was 63 barrels.

2-17-56: 24 hour test on 1/8" choke, flow rate 39 BFPD, .4% basic sediment, TFP--275#, CP--300#.

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	1062'-8520'
Schlumberger Electrical Survey 5"	2000'-8520'
Schlumberger Microlog 5"	2000'-8518'
Schlumberger Microlog 25"	4500'-8514'
Schlumberger Temperature Survey	3500'-5913'
Schlumberger Gamma Ray Neutron	4800'-5909'
Schlumberger Gamma Ray Neutron	5400'-8520'

LOG TOPS

Eagle	1212	(+ 950)
Niobrara	2073	(+ 89)
Greenhorn	2415	(- 253)
Graneros	2632	(- 470)
Muddy	2995	(- 833)
Dakota Silt	3212	(-1050)
Swift	3678	(-1516)
Vanguard	3998	(-1836)
Rierdon	4178	(-2016)
Piper Shale	4365	(-2203)
Piper Limestone	4438	(-2276)
Gypsum Springs	4494	(-2332)
Spearfish	4704	(-2542)
Amsden	4780	(-2618)
Heath	4908	(-2746)
Otter	5059	(-2892)
Kibbey Sandstone	5217	(-3055)
Kibbey Limestone	5355	(-3193)
Madison	5460	(-3298)
"A" Zone	5591	(-3429)
"B-1" Zone	5720	(-3558)
"B-2" Zone	5737	(-3575)
"C" Zone Intercrystalline	5877	(-3715)
Lodgepole (?)	6585	(-4423)
Bakken	7258	(-5096)
Three Forks	7286	(-5124)
Nisku	7386	(-5224)
Ireton Shale	7472	(-5310)
Dawson Bay	8218	(-6056)
Ashern	8288	(-6126)
Silurian Interlake	8318	(-6156)
Interlake Porosity	8392	(-6230)

DRILL STEM TESTS

D.S.T. #1: 4958'-4970' with Halliburton, 1/2" choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with strong blow, continued throughout test. Gas to surface in 3 hours and 25 minutes. Recovered 365' clean oil. Corrected gravity 42.6. 4205' salt water. IBHFP--25#; FBHFP--2030#; BHSIP--2635#; Hydro--2720#. Attempted to test from 4954'-4961', packer failed, misrun.

D.S.T. #2: 4955'-4962' reran with Halliburton, straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, continued throughout test. Recovered 3006' gas, 90' clean black 42.6 gravity oil, 2180' salt water. IBHFP--32#; FBHFP--1145#; BHSIP--2635#; Hydro--2720#. Bottom packer held.

D.S.T. #3: 4981'-4988' with Johnston, straddle tested, flowed muddy salty water to surface in 72 minutes, no show of oil, shut in for 30 minutes. IBHFP--340#; FBHFP--2200#; BHSIP--2480#; Hydro--2580#. Bottom packer held ok.

D.S.T. #4: 5072'-5084' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow under 1" water, died in 105 minutes. Recovered 5' clean black oil, 15' rathole mud. IBHFP--15#; FBHFP--15#; BHSIP--65#; Hydro--2952#.

D.S.T. #5: 5220'-5230' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 2 hours, closed 30 minutes. Tool opened with weak blow, died in 1 hour. Recovered 5' clean 36 gravity black oil, 30' oil-cut mud. IBHFP--15#; FBHFP--35#; BHSIP--1790#, Hydro--3040#.

D.S.T. #6: 5253'-5265' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with good blow, decreased to weak blow at end of test. Recovered 3677' gas, 90' clean 35 gravity black oil, 60' oil-and-gas-cut mud, 3322' salt water with show of oil. IBHFP--65#; FBHFP--1495#; BHSIP--2650#; Hydro--2692#. Bottom packer held ok.

D.S.T. #7: 5236'-5250' with Halliburton, straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool open with good blow, continued throughout test. Recovered 3621' gas, 2093' dark brown 38 gravity clean oil, 60' oil-and-gas-cut mud, 30' muddy salt water. IBHFP--32#; FBHFP--738#; BHSIP--2633#; Hydro--2952#. Bottom packer held ok.

D.S.T. #8: 5358'-5382' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 1 hour. Tool opened with very weak blow, continued throughout test. Recovered 5' very slightly oil-cut mud, no gas. IBHFP--15#; FBHFP--15#; BHSIP--32#; Hydro--3012#.

D.S.T. #9: 5458'-5475' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 1 hour, closed 20 minutes. Tool opened with very weak blow. Recovered 5' rathole mud, no show of oil. IBHFP--15#; FBHFP--15#; BHSIP--65#; Hydro--3070#.

D.S.T. #10: 5470'-5498' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 80 minutes. Recovered 15' mud, no show of oil. IBHFP--15#; FBHFP--15#; BHSIP--15#; Hydro--3185#.

D.S.T. #11: 5561'-5568' with Johnston, straddle packers, 3/4" bottom choke, no water cushion, Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 90 minutes. Recovered 32' of watery rathole mud, slightly salty, no show of oil. IBHFP--0#; FBHFP--0#; BHSIP--0#; Hydro--3100#. Bottom packer held.

D.S.T. #12: 5543'-5557' with Johnston, straddle packers, 3/4" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 60 minutes. Recovered 20' of watery rathole mud, slightly salty, no show of oil. IBHFP--0#; FBHFP--0#; BHSIP--0#; Hydro--3075#. Bottom packer held ok.

D.S.T. #13: 5585'-5595' ("A" Zone) with Johnston, straddle packers, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with fair blow. Recovered 1100' gas, 1460' salty and sulphur water with a slight trace of oil. IBHFP--0#; FBHFP--1150#; BHSIP--2775#; Mud--3150#.

D.S.T. #14: 5596'-5605' (Oolitic Zone) with Johnston, single packer. Tool open 2 hours, closed 30 minutes. Tool opened with fair blow, increased to strong blow in 45 minutes. Recovered 1080' of slightly oil-cut salt and sulphur water. IBHFP--0#; FBHFP--620#; BHSIP--2900#; Mud--3180#.

D.S.T. #15: 5733'-5743' ("B-2" Zone) with Johnston, single packer. Tool open 2½ hours, closed 30 minutes. Tool opened with good blow, increased to strong blow in 23 minutes, and remained strong for rest of test. Recovered 90' gas, 180' oil-and-mud-cut salt water, and 1470' salt water. IBHFP--0#; FBHFP--890#; BHSIP--2830#; Hydro-3240#.

D.S.T. #16: 5712'-5724' (B-1 Zone) with Johnston, straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, continued throughout test. Recovered 70' oil-and-water-cut mud, 200' muddy salt water. IBHFP--0#; FBHFP-100#; BHSIP--2575#; Hydro--3210#. Bottom packer held ok.

D.S.T. #17: 5864'-5883' with Johnston, 3/4" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Recovered 1080' gas, 90' clean oil, 90' oil-cut mud, and 90' muddy salt and sulphur water. IBHFP--0#; FBHFP--200#; BHSIP--3000#; Hydro--3300#.

D.S.T. #18: 5895'-5913' with Johnston, single packer, 3/4" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, decreased to weak blow at end of test. Recovered 10' oil, 240' muddy salt water. IBHFP--0#; FBHFP--200#; BHSIP--2280#; Hydro--3300#.

D.S.T. #19: 5883'-5892' ("C" Zone) with Halliburton, straddle packers, 1/2" bottom choke, no water cushion. Tool open 3 hours, closed 30 minutes. Tool opened with good blow and continued throughout test. Recovered 1710' gas, 285' clean oil, 165' salt water. IBHFP--0#; FBHFP--150#; BHSIP--3000#; Hydro--3225#. Bottom packer held ok.

D.S.T. #20: 6247'-6261' with Halliburton, straddle packer test. Tool open 2 hours and 5 minutes, shut in 20 minutes. Tool opened with good blow, salt water to surface in 1 hour, 57 minutes, 1/2" bottom choke, no water cushion. IBHFP--367#; FBHFP--2772#; BHSIP--3132#; Hydro--3470#.

D.S.T. #21: 6226'-6241', misrun, top packer failed, reran DST #21 6226'-6241' with Halliburton straddle packers, 1/2" bottom choke, no water cushion. Tool open with strong blow, flowed salt water to surface in 60 minutes. Flowed to pit in 10 minutes, no trace of oil, closed in 30 minutes. Clock broke in top pressure device. No pressures recorded, bottom packer held ok.

D.S.T. #22: 6402'-6417' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, died in 140 minutes. Recovered 90' mud. IBHFP--15#; FBHFP--60#; BHSIP--1705#; Hydro--3515#.

D.S.T. #23: 7044'-7060' with Halliburton single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with good blow, continued throughout test. Recovered 2184' gas, 30' gas-cut mud, no show of oil or water. IBHFP--32#; FBHFP--45#; BHSIP--62#; Hydro--4020#.

D.S.T. #24: 7278'-7288', packer failed, reran DST #24--
7256'-7288' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 2 hours, closed 20 minutes. Tool opened with medium blow, decreased to very weak blow in 1 hour, continued rest of test. Recovered 455' salt-water-cut mud, IBHFP--32#; FBHFP--175#; BHSIP--2615#; Hydro--4060. Test cut short to get out of hole before dark.

D.S.T. #25: 7390'-7412' with Halliburton single packer test, 1/2" bottom choke, 1/4" top choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow and continued throughout test. Recovered 364' gas, 91' muddy salt water with slight show of oil on top, and 3162' salt water. IBHFP--30#; FBHFP--1741#; BHSIP--3738#; Hydro--4020#.

D.S.T. #26: 7412'-7435', Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, continued throughout test. Recovered 273' gas, 4317' salt water. IBHFP--60#; FBHFP--1995#; BHSIP--3738#; Hydro--4073#.

D.S.T. #27: 8381'-8393' with Halliburton, 1/2" bottom choke, 1410' water cushion, double packers, Tool open 1 hour and 30 minutes, closed 30 minutes. Tool opened with strong blow, flowed water cushion to surface 1 hour, flowed water cushion to pit 25 minutes, flowed salt water to pit 5 minutes, full 2" stream. IBHFP--755#, FBHFP--4160#, BHSIP--4240#, Hydro--4690#.

CORE ANALYSIS REPORTS

Company Murphy Corporation Date 10-18-55 Lab. No. 468 Well No. Unit #68 Location SW SE 27-28N-51E

Formations Upper Charles & "A" Zone Field East Poplar County Roosevelt State Montana Depths 5541-5606

Sample No.	Representative of Feet	Midpoint of Sample	Permeability		Effective Porosity Percent	Density		Saturation % of Pore Space	
			Radial	Vertical		Bulk	Matrix	Resid. Oil	Water
	Core #10	5541-5586	Rec. 45'						
NS	5541-45								
1	45-46		F.T.	0.07	3.6	2.58	2.68	24.4	14.7
2	46-47		0.02	-0.01	0.3	2.63	2.64	59.6	28.5
NS	47-52								
3	52-53		F.T.	1.32	0.1	2.65	2.65	8.8	83.1
4	53-54		3.90	0.04	6.1	2.54	2.71	16.9	47.0
5	54-55		0.27	0.25	4.3	2.57	2.69	7.7	48.8
6	55-56		0.05	0.03	1.0	2.61	2.64	0.0	67.9
7	56-57		0.07	U.T.	9.6	2.62	2.76	8.2	31.6
8	57-58		0.18	U.T.	7.9	2.57	2.79	6.5	69.6
NS	58-62								
9	62-63		0.07	0.01	3.5	2.60	2.70	0.0	54.3
10	63-65		0.06	0.02	3.1	2.63	2.71	16.5	58.7
11	65-66		0.03	0.06	4.3	2.58	2.69	15.3	52.3
12	66-67		0.14	0.06	3.0	2.61	2.69	0.0	83.3
13	67-68		5.89	0.10	6.6	2.58	2.71	10.2	25.8
	Core #11	5586-5606	Rec. 19'						
NS	5586-87								
14	87-88		4.02	0.34	0.9	2.70	2.72	0.0	72.2
15	88-89		F.T.	5000+	0.6	2.67	2.69	Tr.	79.4
16	89-90		3.80	0.19	1.4	2.63	2.67	Tr.	50.0
17	90-91		0.05	4.78	0.2	2.66	2.66	Tr.	45.3
18	91-92		0.96	5000+	1.5	2.65	2.69	Tr.	66.0
19	92-93		0.19	5000+	0.4	2.68	2.69	Tr.	82.3
20	93-94		F.T.	2.31	0.1	2.66	2.66	Tr.	50.7
NS	94-5600								
21	5600-01		0.03	0.03	0.1	2.66	2.66	Tr.	55.7
22	01-02		-0.01	0.01	0.4	2.67	2.68	Tr.	95.7
23	02-03		0.02	0.01	0.1	2.69	2.69	0.0	78.4
24	03-04		0.74	5000+	3.5	2.62	2.71	0.0	55.4
	04-06		3.29	0.12	1.8	2.65	2.70	6.1	44.4

CORE ANALYSIS REPORTS CONTINUED

Formation Fast Zone Depths 6235-6274 Date 11-3-55

Sample No.	Representative of Feet	Midpoint of Sample	Permeability		Effective Porosity	Density		Saturation % of Pore Space	
			Radial	Vertical	Percent	Bulk	Matrix	Resid. Oil	Water
	Core #16	6235-6274	Rec. 39'						
26	6235-36		0.47	5.27	3.7	2.56	2.66	0.0	20.8
27	36-37		13.	3.79	8.4	2.46	2.69	2.0	18.9
28	37-38		0.88	0.20	5.4	2.52	2.67	0.0	27.8
29	38-39		0.80	0.47	6.5	2.48	2.65	1.7	34.2
30	39-40		34.	20.	6.5	2.48	2.65	1.5	46.5
31	40-41		U.T.	0.88	1.1	2.63	2.66	Tr.	71.8
32	41-42		17.	5000+	3.5	2.43	2.69	4.6	31.5
33	42-43		1.32	U.T.	7.9	2.47	2.69	6.8	45.6
34	43-44		9.64	0.73	6.9	2.50	2.68	6.8	67.5
35	44-45		0.25	0.08	1.3	2.61	2.65	2.1	50.8
36	45-46		0.13	5000+	5.3	2.55	2.69	0.0	20.0
37	46-47		11.	5000+	3.2	2.63	2.72	0.0	85.6
38	47-48		0.93	5000+	9.3	2.44	2.69	1.2	51.7
39	48-49		5.19	5000+	8.2	2.46	2.69	2.8	66.9
40	49-50		0.66	U.T.	7.3	2.50	2.70	1.2	43.8
41	50-51		12.	5000+	9.7	2.44	2.70	Tr.	79.4
42	51-52		0.49	5000+	4.2	2.61	2.72	Tr.	81.2
43	52-53		16.	2.11	6.3	2.55	2.72	1.4	43.7
44	53-54		4.17	0.22	5.3	2.54	2.68	0.0	54.9
45	54-55		F.T.	132.	3.0	2.59	2.67	Tr.	78.3
46	55-56		35.	5000+	2.8	2.62	2.69	Tr.	80.4
47	56-57		27.	4.26	2.6	2.62	2.69	0.0	58.5
48	57-58		5.23	0.34	4.7	2.58	2.70	2.1	24.7
49	58-59		0.10	0.12	2.6	2.62	2.69	0.0	29.2
50	59-60		0.11	14.	5.5	2.54	2.69	1.6	88.5
51	60-61		U.T.	462.	7.5	2.47	2.67	1.3	50.9
52	61-62		1.78	5000+	4.3	2.58	2.69	0.0	38.4
53	62-63		U.T.	2.31	2.6	2.65	2.72	0.0	30.8
54	63-64		U.T.	0.18	5.0	2.56	2.70	Tr.	33.9
55	64-65		6.40	2.17	4.6	2.58	2.70	0.0	35.4
56	65-66		30.	6.90	5.1	2.53	2.67	0.0	38.0

CORE ANALYSIS REPORTS CONTINUED

Formation Fast Zone & Nisku Depths 6266-7435 Date 11-3-55

Sample No.	Representative of Feet	Midpoint of Sample	Permeability		Effective Porosity	Density		Saturation % of Pore Space	
			Radial	Vertical	Percent	Bulk	Matrix	Resid. Oil	Water
57	6266-67		171.	15.	9.0	2.43	2.67	0.0	56.7
58	67-68		77.	5000+	17.5	2.23	2.70	Tr.	34.9
59	68-69		3.44	0.58	6.2	2.56	2.72	Tr.	58.4
60	69-70		20.	5000+	8.0	2.48	2.70	0.0	73.8
61	70-71		2.85	U.T.	10.3	2.42	2.69	1.0	47.3
62	71-72		0.16	5000+	5.2	2.56	2.70	2.1	70.2
63	72-73		0.21	0.07	4.0	2.60	2.71	Tr.	21.8
64	73-74		0.10	5000+	2.6	2.64	2.70	Tr.	83.5
	Core #20	7412-7435	Rec. 23'						
NS	7412-15								
65	15-16		0.17	U.T.	5.5	2.67	2.82	6.4	48.1
66	16-17		0.12	5000+	6.1	2.67	2.84	3.0	42.8
67	17-18		0.02	5000+	5.2	2.69	2.84	2.3	42.5
68	18-19		1.90	5000+	12.2	2.50	2.85	5.2	30.2
69	19-20		13.	12.	5.8	2.64	2.80	7.6	35.9
70	20-21		3.57	1.42	9.2	2.54	2.80	7.5	29.6
71	21-22		1.64	0.20	7.6	2.58	2.80	8.4	45.1
72	22-23		-0.01	U.T.	2.6	2.75	2.82	0.0	91.9
73	23-24		0.03	0.06	6.1	2.67	2.85	Tr.	38.0
74	24-25		35.	0.53	1.8	2.77	2.82	3.4	88.4
75	25-26		2.03	0.17	5.1	2.69	2.83	2.2	47.1
76	26-27		0.32	0.41	1.1	2.78	2.80	0.0	63.6
77	27-28		355.	1.15	5.9	2.63	2.80	7.5	34.2
78	28-29		U.T.	5000+	6.4	2.67	2.85	12.2	50.9
79	29-30		0.02	27.	1.6	2.78	2.82	3.7	74.7
80	30-31		0.31	9.54	2.7	2.79	2.86	Tr.	73.3
81	31-32		148.	6.82	3.0	2.76	2.85	0.0	43.7
82	32-33		0.18	5.79	4.2	2.72	2.84	0.0	27.4
83	33-34		8.94	0.03	3.2	2.70	2.79	12.8	60.6
84	34-35		1.32	5000+	8.7	2.60	2.85	6.8	28.7

CORE ANALYSIS REPORTS CONTINUED

Formation Nisku Depths 7435-7466 Date 11-28-55

Sample No.	Representative of Feet	Midpoint of sample	Permeability Radial	Permeability Vertical	Effective Porosity Percent	Density Bulk	Density Matrix	Saturation % of Pore Space Resid. Oil	Saturation % of Pore Space Water
	Core #21	7435-7475	Rec. 40'						
85	7435-36		4.02	4.21	11.5	2.50	2.83	5.9	56.8
86	36-37		0.58	0.67	4.3	2.71	2.83	2.3	86.9
87	37-38		2.61	0.38	4.2	2.71	2.83	0.0	15.3
88	38-39		0.07	0.05	1.5	2.78	2.82	0.0	24.7
89	39-40		0.10	0.08	7.2	2.63	2.83	4.3	42.8
90	40-41		7.50	2.92	9.1	2.61	2.87	5.4	36.6
91	41-42		3.90	1.07	7.6	2.65	2.87	1.4	20.5
92	42-43		0.02	5000+	5.4	2.73	2.88	1.9	26.9
93	43-44		22.	8.86	7.5	2.59	2.80	Tr.	25.2
94	44-45		90.	8.24	10.9	2.48	2.78	11.0	45.0
95	45-46		0.36	1.54	9.3	2.54	2.80	7.3	56.6
96	46-47		12.	U.T.	9.0	2.57	2.82	4.4	40.4
97	47-48		6.95	0.81	7.8	2.60	2.82	7.8	43.1
98	48-49		0.94	0.10	3.0	2.75	2.83	3.3	27.0
99	49-50		3.48	0.20	3.9	2.73	2.84	2.6	54.1
100	50-51		0.01	45.	1.8	2.77	2.82	10.6	77.2
101	51-52		42.	2.46	4.0	2.75	2.86	10.0	47.8
102	52-53		3.77	U.T.	5.0	2.72	2.86	1.8	18.8
103	53-54		U.T.	0.13	6.3	2.66	2.84	0.0	15.0
104	54-55		0.47	0.16	2.1	2.79	2.85	0.0	14.8
105	55-56		0.17	0.03	1.9	2.81	2.86	0.0	14.2
106	56-57		3.48	0.02	1.0	2.80	2.84	0.0	25.0
107	57-58		0.01	0.11	2.5	2.77	2.84	0.0	13.6
108	58-59		1.54	1.26	2.3	2.80	2.86	0.0	17.4
109	59-60		1.28	49.	5.4	2.67	2.82	8.1	88.1
110	60-61		2.83	U.T.	8.4	2.60	2.84	1.3	38.1
111	61-62		1.63	0.19	3.8	2.68	2.80	0.0	81.3
112	62-63		0.99	0.51	7.3	2.63	2.84	0.0	55.3
113	63-64		1169.	9.86	5.2	2.67	2.82	Tr.	49.8
114	64-65		0.40	5000+	4.8	2.69	2.83	0.0	93.1
115	65-66		0.10	5000+	7.4	2.65	2.88	0.0	19.5

CORE ANALYSIS REPORTS CONTINUED

Formation Nisku Depths 7466-7475 Date 11-28-55

Sample No.	Representative of Feet	Midpoint of Sample	Permeability		Effective Porosity Percent	Density		Saturation % of Pore Space	
			Radial	Vertical		Bulk	Matrix	Resid. Oil	Water
116	7466-67		0.26	5000+	2.7	2.68	2.76	0.0	34.1
117	67-68		0.02	0.01	1.3	2.76	2.80	0.0	20.8
118	68-69		0.02	0.05	1.9	2.76	2.82	Tr.	28.2
119	69-70		0.15	1.37	2.1	2.84	2.90	0.0	54.3
120	70-71		0.01	0.02	1.4	2.81	2.85	0.0	75.0
121	71-72		0.05	0.05	3.9	2.79	2.90	0.0	13.3
122	72-73		0.05	U.T.	6.6	2.69	2.89	0.0	10.2
123	73-74		0.46	U.T.	2.0	2.83	2.89	0.0	39.0
124	74-75		0.02	0.02	1.3	2.73	2.76	0.0	13.1

CORE ANALYSIS REPORTS*

Company Murphy Corporation Well No. E. P. U. #63 Location 27-23N-51E

Depth Feet	Permeability Millidarcies	Porosity Percent	Residual Saturation Percent Pore Space	
			Oil	Water
Core #2				
4955.5	0.0	10.0	0.0	45.9
4956.5	22.1	10.3	Tr.	53.5
4957.5	17.4	12.2	19.7	31.6
4958.5	98.2	10.5	17.5	21.9
4959.5	377.5	9.7	33.3	27.9
4960.5	177.5	10.3	14.6	31.3
4961.5	47.2	10.9	Tr.	50.5
4962.5	420.0	10.9	17.7	44.3
4963.5	133.7	11.9	14.5	37.9
4964.5	201.7	13.6	19.1	32.3
4965.5	83.9	10.9	19.1	35.8
4966.5	118.1	10.4	25.7	35.9
4967.5	98.5	12.1	15.8	18.1
Core #3				
4984.5	64.5	11.8	12.0	32.8
4985.5	82.1	10.9	11.5	73.4
4986.5	353.4	11.3	8.2	24.5
4987.5	104.8	11.6	Tr.	74.2
4989.5	112.3	10.5	Tr.	56.6
4991.5	175.6	14.4	0.0	51.5
Core #5				
5108.5	0.0			
Core #6				
5184.5	0.0	1.1	0.0	70.7
Core #7				
5231.5	0.0	5.3	0.0	49.9
5232.5	0.0	8.9	0.0	64.7
5233.5	3.8	8.9	0.0	29.7
5234.0	0.0	7.3	Tr.	55.1
5234.5	4.1	8.5	11.3	28.2
5235.0	0.5	7.9	Tr.	44.3
5236.0	0.4	5.4	9.6	48.1
5236.5	0.0	3.6	Tr.	58.0
5237.0	0.3	4.6	Tr.	58.8
5238.0	0.4	6.1	0.0	65.5
5238.5	6.1	6.2	16.3	25.1

*Small plug analysis run by Hycalog, Inc.

CORE ANALYSIS REPORTS CONTINUED

Company Murphy Corporation Well No. E. P. U. #63

Depth Feet	Permeability Millidarcies	Porosity Percent	Residual Saturation Percent Pore Space	
			Oil	Water
5241.5	27.4	8.3	11.6	37.6
5242.5	0.0	9.3	0.0	69.7
5244.5	0.0	10.5	0.0	84.5
5249.5	7.0	14.9	Tr.	62.8
5250.5	10.1	14.3	8.3	45.0
5251.5	32.0	22.9	2.0	24.1
5252.5	0.2	17.3	24.6	33.2
5255.5	187.9	17.8	18.6	45.7
5258.5	246.1	17.6	15.0	40.0
5260.5	108.0	16.2	9.9	59.6
5264.5	0.0	12.7	0.0	39.4
5266.5	0.6	8.1	0.0	62.5
Core #13				
5698.5	0.0	2.6	0.0	80.5
5721.5	0.2	7.5	14.7	21.8
5722.5	1.6	5.7	16.9	50.6
5723.5	7.1	11.4	7.3	36.6
5724.5	1.2	5.7	Tr.	46.2
5725.5	0.6	6.2	24.0	40.0
5726.5	1.9	9.5	19.0	31.6
5727.5	1.1	13.2	8.5	28.4
5728.5	1.9	13.1	11.2	35.3
5729.5	0.4	8.5	12.9	46.5
5738.0	0.0	4.2	2.9	10.1
5739.0	6.1	9.5	11.6	16.6
5740.0	0.0	2.3	Tr.	37.3
5741.0	0.7	5.2	17.7	22.4
5742.0	11.2	9.8	22.9	27.1
5743.0	4.8	5.7	8.4	25.1
Core #15				
5880.5	Tr.	10.7	18.8	13.2
5881.5	0.6	18.4	22.7	24.1
5882.5	0.7	21.9	23.7	42.7
5884.5	0.4	18.0	18.1	54.2
5885.5	0.6	17.9	23.8	37.7
5886.5	0.2	9.9	10.1	42.9
5887.5	0.2	11.1	9.1	40.6
5888.5	0.4	11.8	15.4	30.8
5889.5	0.3	10.9	18.4	38.9
5890.5	0.6	16.2	21.6	33.9
5891.5	0.5	12.1	22.8	68.8
5892.5	0.3	15.8	14.9	47.6
5893.5	0.2	11.7	8.9	71.1
5894.5	0.2	11.6	10.8	60.5

CORE ANALYSIS REPORTS CONTINUED

Depth Feet	Permeability Millidarcies	Porosity Percent	Residual Saturation Percent Pore Space	
			Oil	Water
5895.5	0.2	11.6	17.6	38.8
5896.5	0.2	13.1	17.9	25.9
5897.5	0.2	12.2	14.9	29.8
5898.5	Tr.	8.5	6.1	21.2
Core #19				
7396.5	1.1	1.5	Tr.	85.7
7397.5	0.6	4.0	Tr.	92.8

CORE DESCRIPTIONS

Core No. 1 4909-4922, cut 13', recovered 11'.

2'0"	Gray-green silty shale.
9'0"	Soft red silty shale.

Core No. 2 4952-4969, cut 17', recovered 17'.

2'0"	Sandstone; fine to medium grained, light purple, angular with interbedded shales, red, silty, no show.
3'0"	Sandstone; medium grained, light to dark purple, angular, tight with very slight visible porosity, no show.
11'0"	Sandstone; medium grained, light to medium purple, angular, fair to good intergranular porosity, open to fine tight fracture in top 6' with dark brown bleeding oil associated with all fracturing and considerable bleeding oil on remaining portion. Entire unit oil saturated with good odor, stain and golden yellow fluorescence throughout.
1'0"	Shale; crumbly, red, sandy with trace spotty fluorescence and stain.

Core No. 3 4977-5010, cut 33', recovered 33'.

1'0"	Conglomeritic sand and shale, fine to medium grained, light red-purple, with varicolored inclusions, no show.
2'0"	Shale; red, silty to sandy, banded and shows evidence of caving, no show.
4'0"	Sandstone; fine grained, red to purplish with trace light green bands, very shaley and tight, no visible porosity, no show.
4'0"	Sandstone; medium grained, light red to purple, angular, good intergranular porosity with slightly open to open fracturing in top 2'. Bleeding associated with fracture only, good oil saturation throughout unit with good odor, stain and fluorescence.
6'0"	Sandstone; medium to fine grained, angular, dark red to purple, silty, very faint oil odor, questionable fluorescence and cut, poor porosity.
3'0"	Sandstone; conglomeratic reds, shaley, fine to medium grained, fairly tight, no show.
2'0"	Sandstone; fine grained, with interbedded shales, tight, no show.
11'0"	Shale; red, silty, soft and crumbly.

Core No. 4 5033-5058, cut 25', recovered 19'.

2'0"	Interbedded buff dolomite, coarse crystalline and gray-green dolomitic shale and finely dispersed sand inclusions, no show.
4'0"	Shale; maroon purple to dark red, silty.
5'0"	Shale; bright green to yellow-green.

1'0"	Shale; dark gray.
2'0"	Shale; dull dark red.
4'0"	Shale; variegated brown, green, purple, reds.

Core No. 5 5101-5157, cut 56', recovered 56'.

5'0"	Shale; dark green to black, slightly calcareous, no show.
2'0"	Dolomite, light buff to pink hue with pseudo oolitic spherical soft microscopic inclusions, no visible porosity, faint oil odor on fresh break, fair banded oil stain, fair golden fluorescence on stain, good streaming cut with CCl_4.
8'0"	Shale; grading from red to cream, slightly calcareous throughout.
6'0"	Shale; dark gray to black, calcareous, hard, brittle, no show.
15'0"	Shale; light tan to tan-gray, silty, hard, slightly calcareous with banded appearance toward base of unit, no show.
1'0"	Shale; black, brittle, very calcareous.
3'0"	Anhydrite; massive, white to slightly pink interbedded with black shale to give pseudo conglomeratic appearance, no show.
2'0"	Shale; light gray, silty with occasional red stain, no show.
1'0"	Anhydrite, as next above.
3'0"	Shale; light gray, silty with dark stringers, no show.
2'0"	Anhydrite, as next above.
1'0"	Shale; medium gray, no show.
1'0"	Shale; with pink and white anhydrite inclusions, no show.
1'0"	Shale; light gray, silty, no show.
3'0"	Interbedded black shale and white to pink anhydrite, no show.
2'0"	Shale; medium green to medium gray, highly fractured, no show.

Core No. 6 5183-5238, cut 55', recovered 55'.

6'0"	Shale; variegated greens, reds and light grays, silty, no show.
1'0"	Anhydrite and shale as above, no show.
10'0"	Shale; dark gray-green, brittle, slightly calcareous toward base, no show.
5'0"	Shales; medium green-gray, sandy with white to slightly pink anhydrite inclusions, no show.
3'0"	Shale; dark gray to dark green-gray, brittle, no show.
3'0"	Sandstone; purple with trace green, very fine grained, very hard, tight, grading to sandy shales, gray and hard, no show.
12'0"	Shales; predominately reds, silty, very slightly calcareous, with some medium grays, interbedded, numerous white to pink anhydrite inclusions 5218-5221.

3'0"	Sandstone; medium gray with slight purple hue, fine grained, very tight and hard, no show.
3'0"	Shale; light gray, varied, ranging from sandy to silty, no show.
5'0"	Sandstone; gray to reddish-gray, fine grained, hard, tight, slight visible porosity, no show.
3'0"	Sandstone; as above with spotty golden yellow fluorescence, slight odor on fresh break and spotty stain throughout with occasional bleeding oil on bottom foot and on tight vertical fracture planes.
1'0"	Shale; medium gray, no show, core barrel jammed.

Core No. 7 5231-5277, cut 46', recovered 43'.

3'0"	Sandstone; purple, fine grained, hard, no show.
4'0"	Sandstone; gray to purple, fine to sub-medium grained, with spotty oil stain, weak odor, spotty pale fluorescence associated with tight fracture and tight matrix.
8'0"	Sandstone; medium gray to red-gray, fine to medium grained, slight intergranular porosity with uneven banded oil stain, fair odor, spotty pale fluorescence assocaited with one long open vertical fracture throughout unit, and similar oil show through matrix at upper 6', bottom foot nicely fractured.
5'0"	Sandstone; fine grained, medium red, very shaley, hard, tight, no show.
9'0"	Sandstone, medium grained, angular, red to gray-red, good intergranular porosity, good oil saturation, odor and fluorescence throughout.
7'0"	Sandstone; fine grained, red, shaley, tight, hard, no show.
6'0"	Sandstone; medium to fine grained, grading to shaley, top 3' appears wet, no show.

Core No. 8 5278-5310, cut 32', recovered 29'.

7'0"	Shale; red, sandy, hard, no show.
4'0"	Sandstone, light gray to purplish, fine grained, very hard and tight, with very faint odor, pale brassy spotty fluorescence and slight cut with CCl_4 associated with two very tight irregular fractures.
13'0"	Sandstone; brick red to clear angular grains, very good intergranular porosity, one long vertical open fracture in bottom 5', and one foot shaley 92-93', entire unit appears wet, no show.
2'0"	Shale; reds, sandy, hard, no show.
3'0"	Silty and sandy shale; red, interbedded, fractured throughout.

Core No. 9 5469-5475, cut 6', recovered 6'.

6'0"	Shale; brick red to red-brown, sandy with small veinlets and inclusions of amorphous to crystalline anhydrite, no shows throughout unit.

Core No. 10 5541-5586, cut 45', recovered 45'.

4'0"	Anhydrite, dark gray, amorphous, no show.
2'0"	Limestone; microcrystalline to cryptocrystalline, brown, foliated, brittle with good oil stain, odor and fluorescence.
1'0"	Limestone and anhydrite as above, interbedded with very spotty oil shows.
1'0"	Limestone; black, lithographic, vitreous, brittle, oil stain, odor and fluorescence.
3'0"	Anhydrite; dark gray, amorphous, no show.
6'0"	Limestone; microcrystalline to cryptocrystalline, medium gray to dark gray with shale partings in top 3', short, tight, irregular fractures associated with good oil stain, odor and fluorescence and very spotty fluorescence in matrix.
2'0"	Limestone, microcrystalline, light gray, very argillaceous, traces pale fluorescence and stain, unit appears wet.
2'0"	Shale and limestone interbedded, dark gray, earthy, brittle with rare spotty pin point of fluorescence.
6'0"	Limestone; microcrystalline to cryptocrystalline, gray-brown, earthy, with short tight irregular fractures with excellent oil stain, odor and fluorescence and some bleeding oil along fractures.
1'0"	Limestone; microcrystalline, dark gray, dolomitic, pyritic, frequent calcite inclusions which have good fluorescence and cut with CCl_4.
0'6"	Dolomite; light gray, sub-lithographic, hard, earthy appearing, slight oil stain and fluorescence around crystalline gypsum inclusions.
0'6"	Limestone; medium gray, microcrystalline with calcite inclusions with associated slight stain and fluorescence and poor cut with CCl_4.
0'6"	Dolomite; medium gray, microcrystalline, micaceous with associated trace oil stain, fluorescence and cut around mica.
2'6"	Dolomite; light gray, earthy, appears wet, slight oil stain and fluorescence top 6".
5'0"	Dolomite; light gray, microcrystalline with inclusions and laminated white anhydrite, no show.
5'0"	Dolomite; light gray to gray-brown, microcrystalline to cryptocrystalline with white anhydritic and gypsum inclusions which increase with depth, slight odor on fresh break, spotty pin point fluorescence and cut with CCl_4.
3'0"	Anhydrite; light gray, fine crystalline, dense, no show.

Core No. 11 5586-5605, cut 19', recovered 19'.

1'0"	Anhydrite; gray, amorphous, dense, no show.
7'0"	Limestone; dark brown, grading to gray, amorphous, with numerous short, irregular, fairly tight fractures in top 5', bottom 2' crumbled on removing from core barrel. Good stain, odor and bright golden-yellow fluorescence on fractures, no show in matrix.

6'0"	Limestone; dark gray-brown, argillaceous, amorphous, dense, hard, with occasional thin styolites, slight oil show on tight fractures in middle foot.
5'0"	Limestone; brown, micro to fine crystalline, trace pin point porosity, short, tight, irregular fractures with fair odor, spotty matrix fluorescence, fairly even fluorescence on fracture plane.

Core No. 12 5671-5686, cut 15', recovered 9'.

1'0"	Dolomite; light gray, cryptocrystalline with salt plugged fracture porosity, no show.
8'0"	Salt, massive (actually recovered 2'0")
6'0"	Anhydrite, white to gray, amorphous, salt castish.

Core No. 13 5686-5743, cut 57', recovered 57'

12'0"	Anhydrite; white to gray, amorphous, salt castish, no show.
1'0"	Limestone; dark gray, microcrystalline with salt plugged fracture porosity, faint oil odor on fresh break and good fluorescence and cut in salt crystals along fractures.
2'0"	Interbedded anhydrite and dolomite; dark gray, micro to cryptocrystalline, dense, no show.
8'0"	Dolomite; medium to dark gray, cryptocrystalline with occasional banded zones of anhydrite inclusions, no show.
11'0"	Anhydrite; medium gray, amorphous, no show.
9'0"	Limestone; dark gray-brown, microcrystalline to very fine crystalline, slight intercrystalline porosity, upper 3' having some tight irregular fractures, fair oil odor throughout, spotty staining and some bleeding oil in middle portion, pale even to spotty fluorescence throughout unit, bottom 3' appears wet.
8'0"	Anhydrite; medium gray, amorphous, no show.
6'0"	Limestone; medium gray-brown, fine crystalline, fair intercrystalline porosity, trace vugular porosity top 3', entire unit has numerous short, tight irregular fractures, good oil odor on fresh break, obvious staining throughout unit, good bright matrix and fracture fluorescence.

Core No. 14 5850-5883, cut 33', recovered 33'.

3'0"	Dolomite; dark gray, cryptocrystalline, hard, dense, no show.
5'0"	Limestone; medium dark gray, cryptocrystalline with dark inclusions of coarse crystalline dolomite top foot; several thin zones or bands of dolomitic limestone, no show.
1'0"	Dolomite; dark gray, cryptocrystalline, hard, dense, no show.
6'0"	Limestone; dark gray, cryptocrystalline, dolomitic, becoming argillaceous 63.5-64', no show.

2'0" Anhydrite; and gray dolomite, interbedded, unit appears wet, no show.

1'0" Shale; medium gray, variegated, slightly calcareous, no show.

2'0" Dolomite; dark to medium gray, lithographic to fine crystalline with one isolated small band of anhydrite and one of porous pseudo-oolitic appearance, no show.

4'0" Limestone; medium gray, fine crystalline, hard with one continuous open fracture in bottom 3', no show.

1'0" Limestone; and anhydrite; with banded staining, trace fluorescence, slight odor, unit appears wet.

1'0" Limestone; gray, fine crystalline, dense, no show.

1'0" Dolomite; gray to black, microcrystalline to fine crystalline, dense, no show.

3'0" Limestone; medium gray, fine crystalline, hard, dense, with a continuous fracture throughout unit, very tight in top foot to open in middle foot with questionable remaining 2' of fracture leading into "C" Zone porosity.

3'0" Limestone; dark gray-brown, earthy to very fine crystalline (micro-sucrosic) with fair intercrystalline porosity, good oil odor on fresh break, entire unit oil saturated, good to fair golden yellow fluorescence.

Core No. 15 5883-5913, cut 30', recovered 30'.

16'0" Limestone; dark gray-brown, micro-sucrosic to very fine crystalline, slight visible porosity, trace pinpoint porosity, good oil odor, stain and fluorescence grading from very good at top to fair in bottom 4'.

15'0" Limestone; medium to dark gray, microcrystalline, dense, brittle with long open vertical fractures throughout exhibiting good oil odor, stain and fluorescence in spite of mud flushing action.

Core No. 16 6235-6274, cut 39', recovered 39'.

4'0" Limestone; medium to coarse crystalline, medium to dark gray-brown, with scattered crynoid stems and brachiopod casts, some pin point porosity, slight oil odor on fresh break, spotty golden yellow fluorescence and stain, unit appears wet.

1'6" Limestone; medium to coarse crystalline, light gray-brown matrix, numerous crynoid stems, occasional bryozoan and brachiopods, occasional vugular porosity, tight vertical fracture top foot, good oil odor, bright fluorescence and obvious staining to bleeding oil throughout unit.

10'6" Limestone; medium crystalline, light to medium gray to buff, occasional vugular and pin point porosity, stylolitic in 4th foot from top, earthy gray matrix for crynoid stems, fair oil odor in fracture break, spotty yellow fluorescence and oil stain.

13'0"	Limestone; fine to medium crystalline, gray-brown to buff, good vugular and pin point porosity, good oil odor, stain and fluorescence throughout, very fossiliferous with brachiopods and bryozoans predominant and a few calcite inclusions.
3'0"	Limestone; medium crystalline, dense, gray-brown, matrix with very prevalent crynoid stems giving crumbly core with excellent porosity, spotty fluorescence throughout, fair to poor odor, unit mud invaded, appears wet.
7'0"	Limestone; micro-crystalline, light gray, some vugular and pinpoint porosity, fair to good oil odor on fresh break, good fluorescence and staining throughout with bright spots around vugs, open fracture 2' long in middle of unit.

Core No. 17 7322-7342, cut 20', recovered 20'.

14'0"	Dolomite; gray-green, fine sucrosic to waxy, shaley with occasional soft shale inclusions and occasional very fine sucrosic dolomite inclusions, buff to pink, hard, dense, no show.
2'0"	Shale; gray-green, soft, slightly dolomitic, no show.
4'0"	Shale; rusty, red-brown, silty, no show.

Core No. 18 7342-7356, cut 14', recovered 14'.

7'0"	Shale; rusty, red-brown, silty to slightly sandy, no show.
1'0"	Shale; bright green, dolomitic, no show.
1'0"	Dolomite; buff to pale green, hard, dense, no show.
1'0"	Shale; rusty, red-brown, silty, soft, no show.
4'0"	Shale; green, platey, vertical fracture throughout unit, with buff laminations of dolomite, soft, shaley, along fracture plane is crystalline gypsum in top foot.

Core No. 19 7356-7412, cut 56', recovered 56'.

12'0"	Shale; red-rusty, silty with occasional green shale inclusions or zones and with anhydritic inclusions throughout but prevelant in middle of unit, no show.
1'0"	Shale; bright green, dolomitic, no show.
14'0"	Shale; brick red and green interningled, silty, hard with occasional small pink anhydrite inclusions with one 3' long tight gypsum lined vertical fracture, no show.
4'0"	Shale; reds, greens and buff-purples, dolomitic, with small pink anhydrite inclusions, no show.
6'0"	Anhydrite; white to dark gray, translucent, amorphous, no show.
6'0"	Dolomite; gray-brown, finely sucrosic, some vugs top of unit, open vertical fractures with good oil stain, odor, and pale yellow to blue fluorescence; banded matrix show.
2'0"	Anhydrite; gray to white, amorphous, no show.

3'0" Dolomite as next above with good odor, stain and pale blue and yellow fluorescence.
8'0" Anhydrite; dark gray, amorphous with shaley zone in top of unit, no show.

Core No. 20 7412-7435, cut 23', recovered 23'.

3'0" Anhydrite; dark gray, amorphous, no show.
NISKU 20'0" Dolomite; dark gray-brown, micro sucrosic, hard, stylolitic with occasional small vugular porosity, open fractures bottom 2' and numerous tight vertical crystalline gypsum lined fractures at irregular intervals throughout. Spotty to even pale gold to pale yellow fluorescence along fracture planes and around vugs, matrix fluorescence is spotty and confined to bottom 5' of unit.

Core No. 21: 7435-7475, cut 40', recovered 40'.

3'0" Dolomite; dark gray-brown, finely sucrosic, hard, occasional vuggy porosity, good oil odor, stain and pale fluorescence associated with vugs.
2'0" Dolomite as above, very hard, dense with trace pale fluorescence along very tight vertical fractures.
14'0" Dolomite; dark gray-brown, very fine sucrosic, hard, with very good vugular porosity throughout unit, good oil odor on fresh break, oil bleeding out of large vugs, spotty matrix fluorescence and good fluorescence and stain around vugs.
5'0" Dolomite; dark gray-brown, micro sucrosic, very hard, dense, stylolitic, no show.
8'0" Dolomite; as above with good vugular porosity, open fracture bottom 2'6", fair oil odor, stain and fluorescence associated with vugular porosity, no matrix fluorescence.
6'0" Dolomite as unit 54-59 becoming argillaceous, no show.
0'6" Shale; green, dolomitic, no show.
1'6" Dolomite; dark gray-brown, hard, brittle, argillaceous, with vertical fractures.

MUD PROGRAM SUMMARY

MUD SERVICE CO.: NORTHERN MUD CO.

MUD ADDITIVES AND COST:

Material	Spud - Surface		Surface -6000		6000- T. D.		Total	
	Amt.	Cost	Amt.	Cost	Amt.	Cost	Amt.	Cost
Magcobar			739	2089.52	1789	5058.40	2528	7147.92
Magcogel	25	54.15	141	305.41	238	515.51	404	875.07
Seal Flake					6	99.00	6	99.00
Quebracho			90	1192.50	100	1325.00	190	2517.50
Mica					18	58.50	18	58.50
Hulls					54	243.00	54	243.00
Driscose			24	1080.00	69	3105.00	93	4185.00
Caustic			55	742.50	96	1296.00	151	2038.50
Soda Ash					16	136.00	16	136.00
Lime	6	10.80					6	10.80
S.A.P.P.	4	110.00					4	110.00
Magco Fibre					18	67.50	18	67.50
Sodium Bicarb					20	170.00	20	170.00
Total Mud		174.95		5409.93		12073.91		17658.79
Drayage		82.73		218.63		354.54		655.90
Total Cost		257.68		5628.56		12428.45		18314.69

UNIT MUD COSTS:

	Total Cost	Ft. Drld.	Cost/Foot	Days Mud Used	Cost/Day
Spud - Surface	257.68	1072	.24	2	128.84
Surface-6000	5628.56	4928	1.14	41	137.28
6000-T.D.	12428.45	2514	494.37	44	282.46
Spud-T.D.	18314.69	8514	2.15	87	210.51

MUD PROPERTIES:

Depth	Weight	Viscosity	Water Loss	pH	Remarks
0-1072	High viscosity spud mud				
1072-4500	Native clay and water				
4700	10.1	44	12	13	
5000	10.5	70	8.0	13	Coring
5200	10.5	64	10.6	13	"
5400	10.6	73	12.2	12	Drilling
5600	10.6	54	9.8	12.5	"
5800	10.4	48	9.6	12.5	Coring
6000	10.3	51	9.6	12.5	Drilling
6200	10.4	58	14.0	13	"
6600	10.2	50	10.3	12	"
7000	10.4	51	9.8	12.5	"
7400	10.3	60	10.2	13	Coring
7800	10.3	54	9.0	12	Drilling
8200	10.3	58	9.8	12	"
8514 TD	10.3	60	9.0	12	Circulating

SUMMARY:

A high viscosity spud mud containing cement and gel was used to drill the surface gravels. After the gravels had been penetrated the mud was thinned with phosphate and water. A 12 1/4" hole was drilled to 1072' and reamed to a 15" hole. The 10 3/4" casing was landed and cemented at 1062' without difficulty.

Drilling below surface was started with water. No mud materials were added until a depth of approximately 4500' had been reached. At this point the native mud was converted to a high pH red mud with additions of caustic, quebracho, and gel. The weight was controlled with barite or water, the water loss with drispose and the pH with caustic soda.

Loss of mud returns was the only mud difficulty encountered while drilling the well. Because of the expected lost circulation zones, the mud weight was held as low as a safe hydrostatic differential would permit. A mud weight of 10.4 to 10.6 lb/gal was estimated to be the lowest weight which would provide a safe differential, but at a depth of 6188' mud returns were lost. The use of lost circulation material was ineffective, so a cement plug was set. The plug was drilled with full returns regained. From this depth to TD the mud weight was kept at 10.3 lb/gal. However, at 7560' and at 8382' returns were again lost. In both instances the mud weight had been allowed to build up slightly and returns were gained in both cases by cutting the mud weight and adding lost circulation material. Soda Ash and Sodium Bicarbonate were added to aid in combating calcium contamination which resulted from setting the cement plug and from the lime, anhydrite, and gypsum sections drilled.

There were 21 cores cut and 27 drill stem tests run. Good hole conditions were maintained throughout and no troubles were encountered other than lost returns. Mud maintainence was better than average for the area.

DRILLING BIT RECORD

Run No.	Make	Size	Type	Ser. No.	From	To
1	Hughes	15	OSC	Re-Run	0	1072
2	Security	8 3/4	S3P	102110	1072	3251
3	"	"	S6	103064	3251	3492
4	"	"	"	103120	3492	3700
5	"	"	"	103521	3700	4057
6	"	"	"	10300	4057	4470
7	"	"	"	103086	4470	4764
8	"	"	M4N	103402	4764	4910
9	"	"	S6	103993	4910	4952
10	"	"	M4N	103036	4952	5010
11	"	"	S6	103997	5010	5083
12	"	"	"	103312	5083	5182
12 R.R.	"	"	"	"	5182	5231
13	"	"	M4N	52756	5231	5349
14	"	"	"	103121	5349	5469
15	"	"	"	103075	5469	5529
16	"	"	"	78124	5529	5671
17	"	"	"	102947	5671	5850
18	"	"	"	77384	5850	5958
19	"	"	"	70328G	5958	6032
20	"	"	"	105014	6032	6168
21	Hughes	"	OWC	98139	6168	6235
22	Security	"	M4L	103081	6235	6386
23	"	"	H7W	80166	6386	6417
24	Hughes	"	107R	21502	6417	6507
25	"	"	OWC	98142	6507	6568
26	"	"	W7R	18677	6568	6642
27	"	"	OWC	40199	6642	6765
28	Sec.	"	M4L	105008	6765	6920
29	"	"	"	101708	6920	7060
30	Hughes	"	OWV	81174	7060	7268
31	"	"	"	79533	7268	7288
32	"	"	"	75935	7288	7322
33	Security	"	M4L	101685	7322	7435
34	Hughes	"	W7R	17900	7435	7567
35	"	"	"	17901	7567	7759
36	Security	"	H7W	101080	7759	7867
37	"	"	"	80092	7867	7906
38	"	"	"	82342	7906	8106
39	Hughes	"	OWC	35627	8106	8211
40	Security	"	M4L	101622	8211	8303
41	Hughes	"	W7R	17921	8303	8393
42	"	"	"	17918	8393	8514

T O T C O R E C O R D

Depth Out	Degrees Off
1572	1
2251	3/4
3210	3/4
3495	1/4
4057	1 1/4
4427	1/4
5101	1
6043	3/4

Christensen Diamond Coring Record

Core No.	Size	Serial No.	From	To	Footage
1	7 7/8 x 4	N-3239	4909	4922	13
2	"	"	4952	4969	17
3	"	R-2485	4977	5010	33
4	"	"	5033	5058	25
5	"	"	5101	5157	56
6	"	"	5183	5238	55
7	6 1/8	P-668	5231	5277	46
8	"	"	5278	5310	32
9	"	"	5469	5475	6
10	"	"	5541	5586	45
11	"	"	5586	5605	19
12	"	"	5671	5686	15
13	"	"	5686	5743	57
14	"	"	5850	5883	33
15	"	"	5883	5913	30
16	"	"	6235	6274	39
17	"	"	7322	7342	20
18	"	"	7342	7356	14
19	"	"	7356	7412	56
20	"	"	7412	7435	13
21	"	"	7435	7475	40

SAMPLE DESCRIPTION

1072	1230	Shale; light gray, silty; shale; scattered, light tan to brown, silty, scattered quartz pebbles; pyrite, 1200.
1230		Sample Top Eagle
1230	1300	Shale; dark grays, hard; dolomite, buff, amorphous; sandstone, scattered, white to light gray, fine grained.
1300	2400	Shale; light to medium gray, soft.
2400	2440	Shale; light gray, silty; shale, trace, dark gray with occasional white inclusion, many light tan calcareous inclusions.
2440		Sample Top Greenhorn
2440	2620	Shale; dark gray, more calcareous, shale medium gray with many light tan calcareous inclusions.
2620	2660	Shale; dark gray, silty; shale, medium gray with white inclusions, trace aragonite.
2660		Sample Top Graneros (?)
2660	2950	Shale; medium gray to dark gray, silty; shale, trace as above; sandstone; trace, light gray, fine grained.
2950	3005	Shale; medium to dark gray, silty, trace black shale.
3005	3030	Shale as above; sandstone; light gray trace, fine to medium grained, angular, glauconitic, one piece with dull fluorescence and slight cut with CCl_4.
3030		Sample Top Muddy Sandstone
3030	3130	Sandstone; light gray, salt and pepper type, medium to rarely fine grained, angular, glauconitic; shale, as above; pyrite trace.
3130	3220	Shale; light to medium gray, silty; trace sandstone; light gray, fine grained, glauconitic.
3220		Sample Top Dakota Silt
3220	3250	Shale; as above with some light browns; siltstone; trace, brown-tan; pyrite fragments; sandstone, trace as above.
3250	3270	Shale; as above; sandstone; fine grained, light gray to gray-brown, with occasional amber grains.
3270		Sample Top Dakota Sandstone

3270	3290	Sandstone; as above, fine to medium grained; shale; scattered.
3290	3330	Shale; medium to dark gray and some tans, silty, flakey; sandstone; trace, fine to medium grained, white, angular, as above.
3330	3380	Shale; as above; sandstone; scattered, fine to medium grained, as above.
3380	3400	Shale; medium to dark gray, soft; mudstone; gray-brown, soft.
3400	3410	Sandstone; light gray to buff, fine to medium grained, occasionally glauconitic; shale; light to medium gray, flakey; aragonite and pyrite and coal trace.
3410		Sample Top Morrison (?)
3410	3430	Sandstone; buff to amber, fine to medium grained, angular; shale; scattered, dark gray, light gray, scattered reds, purples and green-tans; trace coal.
3430	3450	Sandstone; light gray, fine to medium grained, angular, micaceous; shale; light and dark gray; trace coal and aragonite.
3450	3520	Shale; light, medium and dark grays; sandstone; scattered as above; trace aragonite.
3520	3540	Shale; light and medium dark gray; sandstone;prevalent, dark gray, fine to rarely medium grained, micaceous.
3540	3640	Sandstone; light gray to white, medium grained, glauconitic; shale as above.
3640	3670	Shale; medium to dark gray, silty; some sandstone, light to dark gray, fine to medium grained, occasionally glauconitic.
3670	3680	Sandstone; buff to amber-tan, fine to medium grained, angular; shale; dark gray, some light gray, trace reds, scattered light browns.
3680		Sample Top Swift (?)
3680	3820	As above only sandstone is mostly white; fine grained and glauconitic and shale all grays.
3820	3840	Sandstone; light gray to white, medium grained, glauconitic; shale; scattered, light and medium grays.
3840	3890	Shale; light and medium grays; sandstone; trace as above.
3890	3910	Shale; light, medium and dark grays, some tan to brown, trace reds; sandstone; scattered, light gray to brownish-buff, fine to medium grained, angular; fragments of gypsum.

3910	3950	Shale; light, medium and dark grays; sandstone; trace, light-gray, fine to medium grained, angular.
3950		Sample Top Vanguard (?)
3950	4020	Shale; light gray-green, light gray and medium gray, trace red; scattered to prevalent sandstone, light gray, fine grained, glauconitic.
4020	4040	Sandstone; light gray, fine grained, glauconitic; shale, as above without reds; trace aragonite.
4040	4140	Shale; as above; sandstone prevalent as above; trace aragonite.
4140	4280	Shale; light gray-green, waxy; shale; scattered, light and medium grays; sandstone trace as above.
4280	4365	Shale; light gray, gray-green, dark grays with faint purple tint; sandstone; scattered, light gray, medium gray, micaceous.
4365		Sample Top Piper Shale
4365	4375	Shale; medium grays, olive tans, scattered brick reds; sandstone; trace, fine grained; light gray; limestone; trace, buff, amorphous.
4375	4435	Shale; light and medium grays, scattered reds; limestone; trace as above; sandstone trace as above; trace pyrites.
4435		Sample Top Piper Limestone
4435	4460	Limestone; light brown, cryptocrystalline with dark inclusions, dense; shale; scattered as above; pyrite; trace crystals.
4460	4520	Shale; light gray to gray-green, fissile; limestone trace as above.
4520	4570	Shale; medium gray and gray-green, soft; sandstone; scattered, light gray, fine grained, micaceous and glauconitic, angular.
4570	4640	Shale; as above; sandstone; salt and pepper as above; limestone; scattered, buff to brown, cryptocrystalline, dense.
4640	4660	Shale; gray-green, waxy, medium to dark gray and scattered brick red; limestone and sandstone; trace as above.
4660	4670	Shale; gray-green, medium gray, variegated gray and red, dark rusty red, anhydritic, scattered soft to crystalline white anhydrite.
4670	4680	Shale; mustard green, medium gray and scattered dark reds; Anhydritic as above.

4680	4690	Shale; gray-green, medium grays, rusty-red becoming sandy, very anhydritic; anhydrite as above.
4690	4700	Shale; medium to dark grays, rusty reds, mottled dark green; sandstone; scattered, red, very fine grained, tight, anhydritic, sandstone; trace, white, fine grained.
4700		Sample Top Spearfish
4700	4760	Sandstone; red to white, very fine grained, anhydritic; shale; as above; anhydrite, scattered.
4760	4785	Shale; light to dark gray, gray-green, waxy; sandstone; trace as above.
4785		Sample Top Amsden
4785	4810	Dolomite; buff, amorphous; dolomite; pink, microcrystalline, silty; shale; scattered grays and reds; sandstone; trace, rusty red, very fine grained.
4810	4890	Dolomite; as above, scattered; sandstone; as above down to 4830; shale; gray, gray-green, and prevalent purple, dolomitic.
4890	4909	Shale; variegated, gray, gray-green, purple and red. Limestone; scattered, brown to buff, cryptocrystalline, hard, dense; trace pyrite.
4909	4922	Core No. 1, cut 13', recovered 11'.
4922	4952	Shale; red, gray-green and purples, all silty, trace buff limestone; trace purple, medium grained fairly tight, sharp; sandstone; angular, 50-52.
4952	4969	Core No. 2, cut 17', recovered 17'.
4970	4974	Drilled no samples.
		SLM 4976 equals 4974 Driller.
4977	5010	Core No. 3, cut 33', recovered 33'.
5010	5033	Shale; dark brick red, hard, fissile; sandstone; trace, white to pink, medium grained angular.
5033	5058	Core No. 4, cut 25', recovered 19'.
5058	5064	Shale; red, gray, some bright greens, trace purple.
5064	5101	Shale; as above with some tan calcareous dolomite with faint fluorescence and fair cut with CCl_4, 70-82.
5101	5157	Core No. 5, cut 56', recovered 56'.

5157	5183	Shale; dark red, silty, some green; scattered pink to white dolomite; pyrite and calcite.
5183	5238	Core No. 6, cut 55', recovered 55'.
		SLM 5231 equals 5238 Driller
5231	5277	Core No. 7, cut 46', recovered 43'.
5277	5278	Drilled no samples.
5278	5310	Core No. 8, cut 32', recovered 29'.
5310	5320	Sandstone; red, fine grained, silty; trace shale, red, purple and gray.
5320	5335	Sandstone; white to red, fine grained; shale, trace as above.
5335	5355	Shale; red, purple and gray; sandstone, trace as above; dolomite, trace, sandy, green.
5355		Sample Top Kibbey Limestone
5355	5382	Limestone; tan to buff, amorphous, dense; scattered anhydrite, soft, white; dolomite, scattered, buff, very fine crystalline with fair fluorescence and cut with CCl_4, 68-82.
5382	5390	Dolomite, as above, scattered limestone and shale, as above, no show.
5390	5430	Shale; red, sandy; sandstone, trace, red, very fine grained.
5430	5469	Shale and sandstone as above with scattered limestone, gray to buff, microcrystalline. Anhydrite; 5460-70; trace fluorescence and cut in tight, shaley fine grained sandstone 5460-69.
5469	5475	Core No. 9, cut 6', recovered 6'.
5475	5484	Shale; light orange-red, anhydritic; anhydrite, white, crystalline.
5484	5500	Dolomite; light gray, microcrystalline, dense with spotty pale fluorescence, good cut with CCl_4, trace buff to white limestone.
5500	5510	Shale; red, silty, scattered dolomite and limestone as above. Anhydrite trace.
5510	5541	Limestone and dolomite; light gray, microcrystalline; anhydrite, white prevalent, trace red silty shale.
5541	5586	Core No. 10, cut 45', recovered 45'.

5586	5605	Core No. 11, cut 19', recovered 19'.
5605	5640	Limestone; dark gray to gray-brown, amorphous, hard; Anhydrite; trace, gray, soft.
5640	5650	Dolomite; light gray, microcrystalline, anhydritic.
5650	5671	Anhydrite; white to light gray, amorphous.
5671	5686	Core No. 12, cut 15', recovered 9'.
5686	5743	Core No. 13, cut 57', recovered 57'.
5743	5760	Limestone; medium gray-brown, microcrystalline with occasional pin point porosity having dead oil stain associated. Shale; trace, red and gray; trace anhydrite.
5760	5780	Limestone; gray-brown, amorphous, dense; dolomite; dark to light gray, microcrystalline; anhydrite; trace; scattered red shale.
5780	5810	Limestone; gray-brown, medium crystalline with trace pale fluorescence and poor cut 5788-92; trace anhydrite and red shale.
5810	5820	Limestone as above, trace; dolomite; gray-green, cryptocrystalline, dense; anhydrite, scattered; red shale.
5820	5850	Limestone; dark gray-brown, microcrystalline, chalky; dolomite; scattered as above.
5850	5883	Core No. 14, cut 33', recovered 33'.
5883	5913	Core No. 15, cut 30', recovered 30'.
5913	5950	Limestone; medium gray-brown, medium crystalline to microcrystalline with spotty pale fluorescence and poor cut with CCl_4 to 5945; anhydrite, occasional fragments, white to light gray.
5950	6000	Limestone; dark gray, mottled with light gray, microcrystalline, fossiliferous with slight stain, pale fluorescence and fair cut with CCl_4, 70-88; anhydrite; trace, soft, white.
6000	6046	Limestone; dark to light gray, fine crystalline, rarely pyritic with trace fluorescence and poor cut with CCl_4, 6026-46; limestone; tan to buff, microcrystalline, hard.
6046	6080	Limestone; dark gray to black, microcrystalline, dense; limestone; brush-gray, fine crystalline.

6080	6150	Limestone; buff to gray-brown, fine to medium crystalline, chalky; limestone trace, dark as above; limestone, trace light gray to gray-green, microcrystalline with trace poor fluorescence and very poor cut with CCl_4, 6130-38.
6150	6163	Limestone; light gray to medium gray and scattered buff, cryptocrystalline.
6163	6175	No samples - lost circulation.
6175	6235	Limestone; light gray-brown to buff, medium crystalline; limestone, trace, dark gray, microcrystalline with rare fluorescence and poor cut with CCl_4, 6188-92.
6235	6274	Core No. 16, cut 39', recovered 39'.
6274	6395	Limestone; light gray to gray-buff, microcrystalline to medium crystalline with trace pin point porosity and very slight fluorescence and cut down to 6320.
6395	6460	Limestone; dark gray, microcrystalline, argillaceous; limestone, tan, microcrystalline; shale, trace red and black; pyrite trace down to 7430'.
6460	6490	Limestone; light gray to buff, micro to fine crystalline, chalky.
6490	6575	Limestone; dark gray to dark-gray-brown, medium crystalline with trace limestone as above.
6575	6595	Limestone; light tan-gray to buff, medium crystalline, hard; limestone trace, dark gray, cryptocrystalline, argillaceous increasing with depth.
6595	6780	Limestone; dark gray, cryptocrystalline, hard, dense; pyritic - 6630; trace gypsum; trace shale; brick red 95-10.
6780	6890	Limestone; medium to dark gray, cryptocrystalline, hard, dense.
6890	6940	Limestone; as above; limestone, trace, light gray, microcrystalline, chalky; shale, trace, green 90-94.
6940	7000	Limestone; medium gray-brown, cryptocrystalline, hard; limestone, scattered, light gray, microcrystalline, scattered quartz pebbles, angular clear; shale; trace green, 40 and trace hard black shale at 70.
7000	7095	Limestone; medium gray, cryptocrystalline; limestone; gray-brown to buff, amorphous, chalky, occasional quartz fragment, angular; trace red shale 7080.
7095	7260	Limestone; gray, cryptocrystalline, dense; limestone, white chalky; trace red and green shale throughout, quarts fragment 7150; shale, scattered black, 7160.

SAMPLE DESCRIPTION CONTINUED

7260	7264	Shale; black, carbonaceous; limestone trace as above.
7264	7276	No samples - lost circulation.
7276	7295	Limestone; dark gray, microcrystalline; shale, black, scattered; dolomite, scattered, gray-brown, microcrystalline.
7295	7322	Dolomite; buff to gray-green, microcrystalline, soft, chalky; shale as above; limestone scattered, as above; anhydrite, (?) white, soft.
7322	7342	Core No. 17, cut 20', recovered 20'.
7342	7356	Core No. 18, cut 14', recovered 14'.
7356	7412	Core No. 19, cut 56', recovered 56'.
7412	7435	Core No. 20, cut 23', recovered 23'.
7435	7475	Core No. 21, cut 40', recovered 40'.
7475	7502	Dolomite; dark gray-brown, sucrosic, fair porosity, occasional oil stain, spotty fluorescence and fair cut; dolomite; scattered, light gray to buff, micro to cryptocrystalline; shale; scattered gray-green, calcareous.
7502	7530	Dolomite; buff to pink-tan, microcrystalline, chalky appearance, soft; dolomite; scattered, dark gray-brown, very fine sucrosic.
7530	7558	Dolomite; light to medium gray-brown, microcrystalline; shale, trace black, carbonaceous, quartz fragments 7550-52.
7558	7566	No samples - lost circulation.
7566	7602	Dolomite; dark gray-brown, micro to cryptocrystalline; limestone; scattered, dark gray-brown, to occasional buff, crypto, blocky.
7602	7625	Dolomite; as above, occasional light gray to buff and pyritic; limestone; as above.
7625	7695	Dolomite; dark gray-brown, sucrosic, fair to good intercrystalline porosity; dolomite; light gray, microcrystalline; limestone; trace, gray-brown, crypto 25-40; pyrite, trace 7672.
7695	7806	Dolomite; dark gray-brown, medium and microcrystalline, slight visible porosity; dolomite; light gray, microcrystalline, occasional pyritic; limestone; scattered, gray-brown, crypto-crystalline.
7806	7830	Dolomite; light gray, microcrystalline; dolomite; scattered, gray-brown to buff, sucrosic, fair porosity; shale; trace green, dolomitic.

7830	7870	Dolomite; light gray, microcrystalline, chalky; shale, trace green and red, dolomitic; dolomite; gray-brown, trace, sucrosic.
7870	7902	Dolomite; gray-brown, sucrosic to fine crystalline, no visible porosity; dolomite; light blue-gray, microcrystalline, occasional pyrite; limestone; trace gray-brown, cryptocrystalline; gypsum fragments 7880-82; pyrite; frequent chunks 7890-7900.
7902	7942	Dolomite; medium gray to blue-gray, microcrystalline; dolomite; gray-brown, fine crystalline, no visible porosity, dolomite; trace, clear, coarsely sucrosic 20-25; limestone; scattered, dark gray-brown, cryptocrystalline 7940; shale; trace black carbonaceous 7982.
7942	8020	Dolomite; buff to brown with scattered gray, from finely crystalline to microcrystalline, no visible porosity; few pieces of white soft dolomite; from 10 to 15% light gray micro-crystalline lime, having no visible permeability and porosity.
8020	8044	Dolomite; light gray to buff, microcrystalline to dense, no visible permeability and porosity.
8044	8080	Dolomite; as above with 10% lime that is earthy to chalky, very poor permeability and porosity.
8080	8096	Dolomite; dark brown, microcrystalline to dense with black shaley limestone and trace of anhydrite.
8096	8110	Dolomite; dark brown, microcrystalline to dense with trace gypsum and anhydrite.
8110	8126	Dolomite; black to dark brown, microcrystalline to dense with traces anhydrite and gypsum; black platty shale; few pieces gray dolomite.
8126	8140	Dolomite; dark brown, dense, shaley.
8140	8220	Dolomite; gray to dark gray brown, microcrystalline to fine with few pieces having pin point porosity. Entire unit has platy dark gray to black shale pieces.
8220	8260	Dolomite; brown to buff, microcrystalline, no visible permeability and porosity; traces of 10% black shale and anhydrite, few calcite crystals.
8260	8282	Dolomite; as above with some fine crystals brown dolomite and few pieces of red platey shale.
8282	8320	Dolomite; brown to buff, microcrystalline, no visible porosity; few pieces of green shale.

8320	8360	Dolomite; dark gray to brown, fine crystalline, no visible permeability and porosity; some green crystalline dolomite; also some light gray dolomite; traces of dark gray to black limy shale.
8360	8384	Dolomite; as above without the black shale.
8384	8420	Dolomite; buff to tan, sucrosic (brown sugar), micro to finely crystalline with spotted pin point porosity, no fluorescence or cut.
8420	8460	Dolomite; buff, dense, no visible porosity; traces of anhydrite.
8460	8514	Dolomite; buff to tan and gray brown, finely crystalline, dense, with few scattered pin points of porosity, no fluorescence or cut for entire unit; traces of dark gray shale grading into gray to gray-green toward bottom of unit.

Total Depth 8514 Driller equals 8521 Schlumberger.

W O R K O V E R

E.P.U. #63

Original Status:

This well was completed February 8, 1956 from the Kibbey sand through perforations 5231' to 5243' for a flowing potential of 54 BOPD with no water.

Purpose of Workover:

The flowing life of the well was short and soon required the use of pumping equipment after which the production continued to decrease rapidly and by July 16, 1956, the pumping production was 19 BOPD and an average water cut of 19%. The purpose of this workover was to stimulate the zone to increase production.

Results of Workover:

The well was stimulated with a small shot of mud acid on July 17, 1956 after which the production increased to approximately 75 BOPD and 99 BWPD. The production decline, however, was very rapid and by October 1, 1956, the well was producing 11 BOPD plus 78% water. In order to further stimulate the zone, a sand-oil squeeze consisting of 3000 gallons of oil and 1500# of sand was attempted. After a short leveling off period, the production amounted to 22 BOPD and 518 BWPD and by November 7, the production had further declined to 11 BOPD plus 92% water.

Pending a study of the Kibbey sand and other zones up the hole, the well has been shut in and classified as temporarily abandoned. The tubing rods are still in the hole and no cement plugs have been placed.

Detail Workover:

7-16-56: PBTD 5310', moved in rig.

7-17-56: Rigged up and pulled rods. Mixed 6 carbois acid, 15 gallons morflo and 1 gallon inhibitor with 10 barrels of fresh water. Spot same down tubing. Displaced out in formation and flowed back. Flushed formation by pumping in and flowing back. Maximum pressure 2000#, bleed down pressure 1200#. Opened to pit, flowed small stream to pit. Swabbed 4 hours at the rate of 35 BFPH, 25% water. Fluid level at end of swabbing was 2200' down.

7-18-56: Swabbed 12 hours; first 9 hours swabbed at the rate of 18 BFPH, 25% water. Last 3 hours swabbed at the rate of 13 BFPH, 80% water (62 BOPD, 250 BWPD). Fluid level at 4100' for last 3 hours. SITP--700#, SICP--825#.

7-19-56: Swabbed 11 hours; last 6 hours swabbed in test tank at the rate of 268 BFPD, 44% water, based on water draw before and after test. Last 2 hours swabbed at the rate of 219 BFPD, 80% water, based on samples. Fluid level was 4400'.

7-20-56: Ran rods with Axelson top hole down insert pump.

7-21-56--7-27-56: Waited on portable pumping unit for production testing.

7-28-56: On a 2 hour test, pumped at the rate of 174 BFPD, 57% water (75 BOPD, 99 BWPD).
7-29-56: On a 2 hour test, pumped at the rate of 171 BFPD, 50% water (85.50 BOPD, 85.50 BWPD).
7-30-56: No test, engine down.
7-31-56: No test, motor trouble.
8-1-56: On a 2 hour test, pumped at the rate of 148 BFPD, 65% water (52 BOPD, 96 BWPD). Production for 25 hours--59.65 barrels oil.
8-2-56: No test, motor trouble.
8-3-56: No test, motor trouble.
8-4-56: No test. Production 49 BOPD plus 60% water.
8-5-56: On a 3 hour test, pumped at the rate of 164 BFPD, 56% BS&W (72 BOPD, 92 BWPD). Production 65 BOPD plus 56% water.
8-6-56: On a 2 hour test, pumped at the rate of 150 BFPD, 61% water (58 BOPD, 92 BWPD). Production 54 BOPD plus 61% water.
8-7-56: On a 2 hour test, pumped at the rate of 157 BFPD, 71% water (45 BOPD, 112 BWPD). 10 barrels oil in test barrel.
8-8-56: On a 2 hour test, pumped at the rate of 154 BFPD, 71% water (45 BOPD, 109 BWPD). Production 24 hours--38 barrels oil.
8-9-56: On a 4 hour test, pumped at the rate of 116 BFPD, 71% water (33 BOPD, 83 BWPD). Production for 24 hours--27 barrels oil.
8-10-56: On a 24 hour test, pumped at the rate of 106 BFPD, 72% water (30 BOPD, 76 BWPD).
8-11-56: Pumped through gun barrel, 27 BOPD plus 72% water.
8-12-56: No test.
8-13-56: On a 24 hour test, pumped at the rate of 149 BFPD, 80% water (30 BOPD, 119 BWPD).
8-14-56: Pumped 75 BFPD, 71% water (22 BOPD, 53 BWPD).
8-15-56: Pumped 83 BFPD, 74% water (21 BOPD, 62 BWPD).
8-16-56: On a 4 hour test, pumped at the rate of 24 BOPD, 73% water.
8-17-56: On a 24 hour test, pumped at the rate of 27 BOPD, 75% water.
8-18-56: Pumped 22 BOPD plus 73% water.
8-19-56: Pumped 22 BOPD plus 72% water.
8-20-56: Pumped 27 BOPD plus 72% water.
8-21-56: Pumped 16 BOPD plus 73% water.
8-22-56: Pumped 16 BOPD plus 73% water.
8-23-56: On a 24 hour test, pumped 16 BOPD plus 73% water.
8-24-56: Pumped 16 BOPD plus 76% water.
8-25-56: Pumped 22 BOPD plus 73% water.
8-26-56: Pumped 38 BOPD plus 73% water.
8-27-56: Pumped 31 BOPD plus 73% water.
8-28-56: Pumped 11 BOPD plus 74% water.
8-29-56: Pumped 22 BOPD plus 76% water.
8-30-56: Pumped 22 BOPD plus 76% water.
8-31-56: No test.
9-1-56: Pumped 11 BOPD plus 74% water (24 hours).
9-2-56: Pumped 22 BOPD plus 76% water.
9-3-56: Pumped 16 BOPD plus 76% water.
9-4-56: Pumped 16 BOPD plus 74% water.

9-5-56: Pumped 16 BOPD plus 74% water.
9-6-56: Pumped 16 BOPD plus 76% water.
9-7-56: Pumped 16 BOPD plus 76% water.
9-8-56: Pumped 22 BOPD plus 76% water.
9-9-56: Pumped 16 BOPD plus 76% water.
9-10-56: Pumped 11 BOPD plus 76% water.
9-11-56: Pumped 11 BOPD plus 76% water.
9-12-56: Pumped 11 BOPD plus 78% water.
9-13-56: Pumped 16 BOPD plus 76% water.
9-14-56: Pumped 11 BOPD plus 78% water.
9-15-56: Pumped 11 BOPD plus 78% water.
9-16-56: Pumped 16 BOPD plus 78% water.
9-17-56: Pumped 16 BOPD plus 78% water.
9-18-56: Pumped 11 BOPD plus 78% water.
9-19-56: Pumped 11 BOPD plus 78% water.
9-20-56: Pumped 11 BOPD plus 78% water.
9-21-56: Pumped 11 BOPD plus 76% water.
9-22-56: Pumping unit motor down.
9-23-56: Pumping unit motor down.
9-24-56: Pumping unit motor down.
9-25-56: Water pump out on Wakesha engine.
9-26-56: Repaired pumping unit motor.
9-27-56: No test.
9-28-56: Pumped 27 BOPD plus 78% water (24 hours).
9-29-56: Pumped 16.26 BOPD plus 76% water. Well has not stabilized since being shut down for motor repairs.
9-30-56: Pumped 10.85 BOPD plus 78% water (24 hours).
10-1-56: Pumped 11 BOPD plus 78% water.
10-2-56: Pumped 11 BOPD plus 78% water.
10-3-56: Pumped 11 BOPD plus 80% water.
10-4-56: Pumped 6.42 BOPD plus 81% water.
10-5-56: Pumped 16.26 plus 78% water.
10-6-56: Moved in pulling unit.
10-7-56: Rigged up pulling unit. Made trip with tubing to pick up RTTS Halliburton packer.
10-8-56: Set RTTS packer at 5255', Tested 5-1/2" casing below perforation and old squeeze with 3000#, held ok. Set RTTS packer at 5193'. Tested 5-1/2" casing and blow out preventers with 2500#, held ok. Sand-fractured Kibbey perforation 5231'-5243' with 3000 gallons of oil and 1500# of 20/40 sand. Broke formation with 30 barrels of oil, started feeding at 2000# psi, built to 4300#, injected at the rate of 5.5 BPM. Started 72 barrels of sand oil. Injected at the rate of 5.7 BPM at 4500#, gradually building to 4800#. Packer started leaking. Reset packer. Overflushed with 16 barrels of oil. Injected at the rate of 2 BPM at 5800#, reversed out with 40 barrels oil, holding 2000# back pressure to clear packer. Shut well in. Job complete at 1:45 P.M., 10-7-56.

10-9-56: Swabbed 237 barrels fluid in 10 hours. Last 4 hours swabbed at the rate of 16 BFPH, 80% water (77 BOPD, 307 BWPD). Fluid level was constant at 4200' during last 4 hours of swabbing.
10-10-56: Made trip with tubing, removed RTTS packer (Howco) and picked up seating nipple. Ran rods with 2" x 1½" x 16' D & B (challenger) pump, top cup hold down.
10-11-56: On a 2 hour test, pumped 226 BFPD, 78% water (50 BOPD, 176 BWPD).
10-12-56: On a 2 hour test, pumped 243 BFPD, 78% water (53 BOPD, 190 BWPD).
10-13-56: Pumped 22 BOPD plus 96% water (22 BOPD, 518 BWPD).
10-14-56: Pumped 24 BOPD plus 93% water.
10-15-56: Pumped 11 BOPD plus 94% water.
10-16-56: No test.
10-17-56: No test.
10-18-56: Pumped 98 BFPD, 78% water (23 BOPD, 77 BWPD).
10-19-56: Pumped 98 BFPD, 78% water (23 BOPD, 76 BWPD).
10-20-56: Pumped 21.66 BOPD plus 87% water.
10-21-56: Pumped 16 BOPD plus 89% water (24 hours).
10-22-56: On a 2 hour test, pumped 181 BFPD, 82% water (33 BOPD, 148 BWPD).
10-23-56: On a 3 hour test, pumped 185 BFPD, 90% water (19 BOPD, 166 BWPD).
10-24-56: On a 2 hour test, pumped 185 BFPD, 89% water (21 BOPD, 164 BWPD).
10-25-56: On a 2 hour test, pumped 188 BFPD, 90% water (19 BOPD, 169 BWPD).
10-26-56: Pumped 16 BOPD plus 89% water.
10-27-56: On a 3 hour test, pumped 165 BFPD, 91% water (15 BOPD, 150 BWPD).
10-28-56: Pumped 16 BOPD plus 91% water.
10-29-56: Pumped 16 BOPD plus 90% water.
10-30-56: Pumped 16 BOPD plus 90% water.
10-31-56: Pumped 16 BOPD plus 90% water.
11-1-56: Pumped 16 BOPD plus 90% water.
11-2-56: Pumped 16 BOPD plus 91% water.
11-3-56: On a 2 hour test, pumped 192 BFPD, 91% water (16 BOPD plus 91% water).
11-4-56: Pumped 16 BOPD plus 91% water.
11-5-56: Pumped 11 BOPD plus 91% water.
11-6-56: Pumped 11 BOPD plus 93% water.
11-7-56: Pumped 11 BOPD plus 92% water.
11-8-56: Temporarily abandoned.

DRILL STEM TESTS

D.S.T. #1: 5480'-5489' ("A" Zone) with Halliburton straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, died in 40 minutes. Dead 35 minutes, started weak blow, continued throughout rest of test. Recovered 30' gas, 90' gas-cut mud, 120' muddy salt sulphur water, and 438' salt sulphur water. IBHFP--0#, FBHFP--230#, BHSIP--2850#, Hydro--3160#. Bottom packer held ok.

D.S.T. #2: 5631'-5640' ("B-2" Zone) with Halliburton, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow for 18 minutes, increased to good blow, continued throughout test. Recovered 3270' gas, 360' clean oil, 180' oil-and-gas-and-salt-water-cut mud, 540' salt water. IBHFP--20#, FBHFP--470#, BHSIP--2730#, Hydro--3015#.

D.S.T. #3: 5614'-5626' ("B-1" Zone) with Halliburton straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 45 minutes. Dead rest of test. Recovered 5' mud. IBHFP--0#, FBHFP--20#, BHSIP--20#, Hydro--3015#. Bottom packer held ok.

D.S.T. #4: 5768'-5779' ("C" Zone) with Halliburton, 1/2" bottom choke, no water cushion. Tool open 2½ hours, closed 30 minutes. Tool opened with very weak blow, died in 65 minutes, dead rest of test. Recovered 15' rathole mud. IBHFP--0#, FBHFP--0#, BHSIP--20#, Hydro--3015#.

D.S.T. #5: 5781'-5791' with Halliburton straddle packer test, 1/2" bottom choke, no water cushion. Tool open 3 hours, closed 30 minutes. Recovered 180' gas, 90' slightly oil-cut-muddy-salt water. IBHFP--0#, FBHFP--40#, BHSIP--123#, Hydro--3030#.

WORKOVER HISTORY NO. 2

July 25, 1960

Lease and Well No. East Poplar Unit Well No. 63

Field: East Poplar Unit County: Roosevelt State: Montana

Well Location: SW NE Section 27, T28N, R51E

Status Prior to Present Job:

Date Completed: February 8, 1956 Date of Last Workover: November 9,1956

TD: 8521' PBTD: 5310' Producing Zone: Kibbey Sand

Perforations: 5231-5243' Cumulative Production: 5,095 BO, 6,768 BW

Latest Test: 192 BFPD, 91% Water (16 BOPD, 176 BWPD)

Summary of Workover:

7-12-60 PBTD 5310'. Drilling on Halliburton Packer at 5345'. Moved in rig to drill out packers and recomplete in the "B-4" Zone. Made trip with tubing to pick up 4 3/4" bit. Washed down to solid bottom. Drilled cement from 5316' to 5345;. Circulated 1 1/2 hours and shut in.

7-13-60 PBTD 5310'. Running tubing with new bit. Drilled on Model "C" Halliburton production packer at 5345'. Made 4' of hole to 5349'. Pulled tubing to change bits.

7-14-60 Drilling on packer at 5556'. Drilled remainder of packer at 5345'. Then drilled 10' of cement. Ran tubing, found top of cement on second packer at 5496'. Drilled cement from 5496 to 5553', then drilled 3' on second packer. Shut in overnight.

7-15-60 PBTD 5817'. Preparing to run tubing with Baker full bore packer. Drilled up remainder of packer, then drilled 30' hard cement. Ran bit to bottom 5817', circulated 2 hours; pulled tubing. Ran Gamma Ray Neutron log from 5817-4800'. Perforated "B-4" Zone (5783-93') with Schlumberger 3 5/8" jet gun 4 SPF. Shut in overnight.

7-16-60 PBTD 5821'. Well shut in overnight. Had 500' water with slight acid taste fillup. Ran swab each 30 minutes for 4 hours, no fluid. Pulled packer and ran 4 3/4" Hughes bit. Drilled junk from 5817' to 5821'. Shut well in overnight.

7-17-60 PBTD 5848'. Drilled cement from 5821' to 5848'. Reversed circulation 1 1/2 hours. Pulled bit and perforated "B-5" Zone with Lane Wells Type B bullet gun from 5809' to 5827' with 4 SPF. Going in hole with Baker full bore packer to acidize and test.

7-18-60 PBTD 5817'. Swabbing. Ran tubing with Baker full bore packer and 13' stinger. Set packer at 5775'. Swabbed tubing dry. Waited 1 hour, made dry run. No fluid movement. Acidized with 500 gallons Dowell etching acid. Pressured upon formation and soaked acid for 20 minutes. Formation broke with 1½ bbls. acid in at 3900# back to 3000#. Injected remainder of acid at rate of 1 BPM at 3000#. Ten minute bleed down pressure 2300#. Swabbed to pit, recovering spent acid and water. Swabbed tubing dry. Let set overnight.

7-19-60 PBTD 5848'. Swab testing. Set Baker full bore packer at 5832'. Tested below perforations (5832-5848') with 2000#. Held ok. Reset packer at 5795'. Tested between "B-4 & 5" Zone perforations with 2000#. Held ok. Released packer. Spotted 500 gallons of Dowell etching acid on perforations 5809-5827'. Reset packer at 5795'. Pressured formation to 2600#, bled to 1900# in 5 minutes. Increased to 2800#, bled to 2000# in 5 minutes; increased to 3200#, bled to 2000# in 8 minutes; increased to 3800#, bled to 2000# in 8 minutes; increased to 3800# with 1½ bbls. out on formation. "B-5 & 4" Zones communicated. Reset packer at 5778'. Injected remainder of acid at rate of 1½ BPM at 3200#. Overflushed 4 bbls. Swabbed acid water back and swabbed tubing dry. Packer gave way. Reset packer at 5774'. Swabbed tubing dry, packer gave way. Pulled out of hole for new packer.

7-20-60 PBTD 5848'. Ran Baker full bore packer. Set at 5795' to swab test for communication between "B-4 & 5" Zone perforations. Found zones communicated. Reset packer at 5758'. Swabbed tubing dry. Ran swab every hour for 4 hours. Recovered approximately 200' of salt water per hour. Released packer and pulled out of hole. Ran 186 joints 5811' 2 3/8" tubing in hole open ended. Bottom of tubing at 5817'. Closed well in. Rigged down unit. Temporarily abandoned.

Final Summary of Workover:

1. Perforations: "B-4" (5783-93') "B-5" (5809-27')

2. Final PBTD: 5848'

3. Initial Potential after Workover: 5 Barrels Salt Water Per Hour

4. Name of Producing Zone: "B-4" and "B-5"

5. Downhole Equipment:
   10 3/4" casing at 1062'
   5 1/2" casing at 5945'
   2 3/8" tubing at 5817'

6. Results of Workover: Test of "B-4" and "B-5" Zones unsuccessful. Temporarily abandoned. Making study of "C" Zone.

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA

CHEMISTS GEOLOGISTS ENGINEERS

113 WEST BELL
GLENDIVE, MONTANA

MURPHY CORPORATION

#63 UNIT

SW SE 27-28N-51E

EAST POPLAR, MONTANA

CORE ANALYSIS REPORT

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA

CHEMISTS GEOLOGISTS ENGINEERS

113 WEST BELL
GLENDIVE, MONTANA

February 15, 1956

Murphy Corporation
El Dorado, Arkansas

Gentlemen:

Full diameter corestudy shows the Upper Charles to be very tight and non-productive, The A Zone has permeability through fractures but is very dense and highly water saturated. The Fast Zone also appears to be water bearing.

The top seven feet of the Nisku is tight in the matrix but has permeability through fractures. The porosity averages 7.4% and the saturations indicate the possibility of oil or gas production. Gas was obtained on a DST of the interval.

Yours very truly,

CHEMICAL & GEOLOGICAL LABORATORIES OF MONTANA

J. Roger Artley

J. Roger Artley
Chemical Engineer

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Murphy Corporation Field East Poplar Formation Upper Charles & A Zone

Well No. #62 Unit Location SW SE 27-28N-51E Depths 5541-5606

Elevation 2100 KB Date October 18, 1955 Lab. No. 468

REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY RADIAL	PERMEABILITY VERTICAL	EFFECTIVE POROSITY %	DENSITY WHOLE	DENSITY MATRIX	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
CORE #10	5541-86	Rec. 45'	Upper Charles							
5541-45										Barren
45-46			F.T.	0.07	3.6	2.58	2.68	24.4	14.7	ls,MC&VC
46-47			0.02	-0.01	0.3	2.63	2.64	59.6	26.5	ls,Shy
47-52										Barren
52-53			F.T.	1.32	0.1	2.65	2.65	8.8	83.1	ls,VC
53-54			3.90	0.04	6.1	2.54	2.71	16.9	47.0	ls,Shy,VC,Sty
54-55			0.27	0.25	4.3	2.57	2.69	7.7	48.8	ls,Sty
55-56			0.05	0.03	1.0	2.61	2.64	0.0	67.9	ls,Sty
56-57			0.07	U.T.	9.6	2.62	2.76	8.2	31.6	ls,SP
57-58			0.18	U.T.	7.9	2.57	2.79	6.5	69.6	ls,SP
58-62										Barren
62-63			0.07	0.01	3.5	2.60	2.70	0.0	54.3	ls,VC
63-65			0.06	0.02	2.1	2.63	2.71	16.5	58.7	ls,
65-66			0.03	0.06	2.3	2.58	2.69	15.3	52.3	ls
66-67			0.14	0.06	3.0	2.61	2.69	0.0	83.3	ls,VC
67-68			5.39	0.10	6.6	2.53	2.71	10.2	25.8	ls,MC
CORE #11	5586-5606	Rec. 19'	A Zone							
5586-87										Anhydrite
87-88			4.02	0.34	0.9	2.70	2.72	0.0	72.2	ls,VC
88-89			F.T.	5000+	0.6	2.67	2.69	Tr.	79.4	ls,VF
89-90			3.80	0.19	1.4	2.63	2.67	Tr.	50.0	ls,VC,Sty
90-91			0.05	4.78	0.2	2.66	2.66	Tr.	45.3	ls,VC
91-92			0.96	5000+	1.5	2.65	2.69	Tr.	66.0	ls,VF,SP
92-93			0.19	5000+	0.4	2.68	2.69	Tr.	82.3	ls,VF,SP
93-94			F.T.	2.31	0.1	2.66	2.66	Tr.	50.7	ls,VC
94-5600										
5600-01			0.03	0.03	0.1	2.66	2.66	Tr.	55.7	ls,VC
01-02			-0.01	0.01	0.4	2.67	2.68	Tr.	85.7	ls,Sty
02-03			0.02	0.01	0.1	2.69	2.69	0.0	78.4	ls,Shy,VC
03-04			0.74	5000+	3.5	2.62	2.71	0.0	55.4	ls,VF,SP

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA
113 West Bell
Glendive, Montana

CORE SUMMARY AND ESTIMATED RECOVERABLE OIL

CORE SUMMARY

Formation Name		Upper Charles	A Zone	Fort Zone	Nisku
Depth--Feet		5445-66	5587-5605	6235-74	7415-22
Feet of Permeable Productive Formation		14	12	39	7
Porosity	Minimum	0.1	0.1	1.1	5.2
	Maximum	9.6	3.5	17.5	12.2
	Weighted Average	4.0	0.9	5.9	7.4
Permeability	Minimum	0.02	0.01	0.12	0.17
	Maximum	5.89	5000+	5000+	5000+
	Weighted Average	0.87	1668	1691	2145
Capacity—Average Porosity x Feet Productive Formation		56.5	11.0	229.0	51.6
Weighted Average Residual Oil Saturation, % Pore Space		13.6	0.5	1.0	5.8
Weighted Average Total Water Saturation, % Pore Space		51.7	63.8	50.7	38.5
Weighted Average Connate Water Saturation, % Pore Space					
Formation Volume Factor					
Probable Type of Production		Non-Productive	Water	Water	Gas

Remarks:

ESTIMATED RECOVERABLE OIL

Stock Tank Oil in Place:
- Barrels Space per Acre-Foot
- Barrels Connate Water per Acre-Foot
- Barrels Reservoir Oil per Acre-Foot
- Barrels Stock Tank Oil per Acre-Foot

Solution Gas Drive:
- Barrels per Acre-Foot
- Barrels per Acre

Water Drive:
- Barrels per Acre Foot
- Barrels per Acre

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Murphy Corporation Field East Poplar Formation Fast Zone

Well No. #63 Unit Location SW SE 27-28N-51E Depths 6235-74

Elevation 2160 KB Date November 3, 1955 Lab. No. 4-8

SAMPLE NO.	REPRESENTATIVE OF FEET	EQUIVALENT OF SAMPLE	FOOTAGE	PERMEABILITY MAXIMUM	PERMEABILITY 90°	EFFECTIVE POROSITY	DENSITY WET	DENSITY GRAINS	SATURATION % PORE SPACE WATER	SATURATION % PORE SPACE OIL	DESCRIPTION
	CORE #16	6235-74	Rec. 39'	Fast Zone							
26	6235-36			0.47	5.27	3.7	2.56	2.66	0.0	20.8	ls,VC,SVu,Sty
27	36-37			13	3.79	8.4	2.46	2.69	2.0	18.9	ls,Vu
28	37-38			0.98	0.20	5.4	2.52	2.67	0.0	27.8	ls,SVu,Sty
29	38-39			0.80	0.47	6.5	2.48	2.65	1.7	34.2	ls,SVu
30	39-40			34	20	6.5	2.48	2.65	1.5	40.5	ls,VC,SVu
31	40-41			UT	0.83	1.1	2.53	2.66	Tr	71.3	ls,VC,SVu,Sty
32	41-42			17	5000+	9.3	2.43	2.69	4.6	31.5	ls,VF,Vu,SP
33	42-43			1.32	UT	7.9	2.47	2.69	6.8	45.6	ls,VC,SVu,SP
34	43-44			9.94	0.73	6.9	2.50	2.68	6.8	67.5	ls,SVu,Sty
35	44-45			0.25	0.08	1.3	2.61	2.65	2.1	59.8	ls,VC,SVu
36	45-46			0.13	5000+	5.3	2.55	2.69	0.0	20.0	ls,VF,SVu,Sty
37	46-47			11	5000+	3.2	2.63	2.72	0.0	65.6	ls,VF,Vu,SP
38	47-48			0.93	5000+	2.3	2.44	2.69	1.2	51.7	ls,VF,SVu,SP
39	48-49			5.19	5000+	8.2	2.46	2.69	2.3	66.9	ls,VF,SVu
40	49-50			0.86	UT	2.3	2.50	2.70	1.2	43.3	ls,VC,Vu,Sty,SP
41	50-51			12	5000+	9.7	2.44	2.70	Tr	79.4	ls,VF,SVu
42	51-52			0.49	5000+	4.2	2.61	2.72	Tr	61.2	ls,VF,SVu
43	52-53			16	2.11	8.3	2.55	2.72	1.4	43.7	ls,SVu,Sty
44	53-54			4.17	0.28	5.3	2.54	2.68	0.0	54.9	ls,VF,SVu
45	54-55			FT	132	7.9	2.59	2.67	Tr	78.3	ls,VC,SVu
46	55-56			35	5000+	2.8	2.62	2.69	Tr	80.4	ls,VF,SVu
47	56-57			27	4.26	2.6	2.52	2.69	0.0	58.5	ls,VC,SVu
48	57-58			5.23	0.34	4.7	2.58	2.70	2.1	24.7	ls,SVu
49	58-59			0.10	0.12	2.6	2.62	2.69	0.0	29.2	ls,VC,SVu,Sty
50	59-60			0.11	14	5.6	2.54	2.69	1.6	88.5	ls,VC
51	60-61			UT	462	7.5	2.47	2.67	1.3	50.9	ls,VC,SVu
52	61-62			1.78	5000+	4.3	2.58	2.69	0.0	38.4	ls,VF,SVu,Sty,SP
53	62-63			UT	2.31	2.6	2.65	2.72	0.0	30.8	ls,VC,SVu,Sty
54	63-64			UT	0.18	5.0	2.56	2.70	Tr	33.8	ls,VC,SVu
55	64-65			6.40	2.17	4.6	2.58	2.70	0.0	35.4	ls,Vu,Sty
56	65-66			30	6.90	5.1	2.53	2.67	0.0	58.0	ls,VF,Vu

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORESTUDY

Operator Murphy Corporation Field East Poplar Formation Fast Zone & Nisku

Well No. #62 Unit Location SW SE 27-28N-57E Depths 6266-7435

Elevation 2161 KB Date November 3, 1955 Lab. No. 468

SAMPLE NO	REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY RADIAL	PERMEABILITY VERTICAL	EFFECTIVE POROSITY %	DENSITY GRAIN	DENSITY MATRIX	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE W. F.	DESCRIPTION
57	6266-67			171	15	9.0	2.43	2.67	0.0	56.7	ls,Vu,Sty
58	67-68			77	5000+	17.5	2.23	2.70	Tr.	34.9	ls,VF,Vu,SP
59	68-69			2.44	0.58	6.2	2.56	2.72	Tr.	58.4	ls,Sty
60	69-70			20	5000+	8.0	2.48	2.70	0.0	73.8	ls,VF,Vu,SP
61	70-71			2.35	U.T.	10.3	2.42	2.69	1.0	47.3	ls,VC,SVu,Sty,SP
62	71-72			0.10	5000+	5.2	2.56	2.70	2.1	70.2	ls,VF,SVu,Sty,SP
63	72-73			0.21	0.07	4.0	2.60	2.71	Tr.	21.3	ls,VF,SVu,Sty
64	73-74			0.10	5000+	2.6	2.64	2.70	Tr.	83.5	ls,VF,Sty
	CORE #20	7412-35	Rec. 23'	Nisku							
NS	7412-15										
65	15-16			0.17	U.T.	5.5	2.67	2.82	6.4	43.1	Do,VC,I
66	16-17			0.12	5000+	6.1	2.67	2.84	3.0	42.8	Do,VF,I,SP
67	17-18			0.02	5000+	5.2	2.69	2.84	2.3	42.5	Do,VF,I,SP
68	18-19			1.90	5000+	12.2	2.50	2.85	5.2	30.2	Do,VF,I,SP
69	19-20			13	12	5.8	2.64	2.80	7.6	35.9	Do,VF,Sty,I
70	20-21			3.57	1.42	9.2	2.58	2.80	7.5	29.6	Do,SVu,I
71	21-22			1.64	0.20	7.6	2.58	2.80	8.4	45.1	Do,I,A
72	22-23			-0.01	U.T.	2.0	2.75	2.82	0.0	31.9	Do,VC,SP
73	23-24			0.03	0.06	6.1	2.67	2.85	Tr.	30.0	Do
74	24-25			35	0.53	1.3	2.77	2.82	3.4	88.4	Do,VC,Sty
75	25-26			2.03	0.17	5.1	2.69	2.83	2.2	47.1	Do,A
76	26-27			0.32	0.41	1.1	2.78	2.80	0.0	63.6	Do,MC
77	27-28			3.5	1.15	5.9	2.63	2.80	7.5	34.2	Do,VC
78	28-29			U.T.	5000+	6.4	2.67	2.85	12.2	50.9	Do,VF
79	29-30			0.02	27	1.3	2.78	2.82	3.7	74.7	Do,VC
80	30-31			0.31	9.54	2.7	2.79	2.86	Tr.	73.3	Do,VC
81	31-32			148	6.82	3.0	2.76	2.85	0.0	43.7	Do,VC
82	32-33			0.18	5.79	4.2	2.72	2.84	0.0	27.4	Do,VC
83	33-34			3.94	0.03	3.2	2.70	2.79	12.8	60.6	Do,Sty
84	34-35			1.32	5000+	8.7	2.60	2.85	6.8	28.7	Do,VF,SP

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Murphy Corporation Field East Poplar Formation

Well No. #63 Unit Location SW SE 27-28N-51E Depths

Elevation 2160 KB Date November 3, 1955 Lab No 468

SAMPLE NO.	REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY RADIAL	PERMEABILITY VERTICAL	EFFECTIVE POROSITY	DENSITY GRAIN	DENSITY BULK	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
57	6265-67			171	15	9.0	2.43	2.67	0.0	56.7	ls,Vu,Sty
58	67-68			77	5000/	17.5	2.23	2.70	Tr	34.9	ls,VF,Vu,SP
59	68-69			3.44	0.58	6.2	2.55	2.72	Tr	59.4	ls,Sty
60	69-70			20	5000/	8.0	2.48	2.70	0.0	73.8	ls,VF,Vu,SP
61	70-71			2.85	UT	10.3	2.42	2.69	1.0	47.3	ls,VC,SVu,Sty,SP
62	71-72			0.16	5000/	5.2	2.56	2.70	2.1	70.2	ls,VF,SVu,Sty,SP
63	72-73			0.21	0.07	4.0	2.60	2.71	Tr	21.8	ls,VF,SVu,Sty
64	73-74			0.15	5000/	2.8	2.64	2.70	Tr	52.6	ls,VF,Sty

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Murphy Corporation Field East Poplar Formation East Zone

Well No. #63 Unit Location SW SE 27-28N-51E Depths 6235-74

Elevation 2160 KB Date November 3, 1955 Lab. No. 468

SAMPLE NO.	REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY RADIAL	PERMEABILITY VERTICAL	EFFECTIVE POROSITY %	DENSITY BULK	DENSITY MATRIX	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
	CORE #15	6235-74	Rec. 39'	Fast Zone							
26	6235-36			0.47	5.27	3.7	2.56	2.66	0.0	20.8	ls,VC,SVu,Sty
27	36-37			13	3.79	8.4	2.46	2.69	2.0	18.9	ls,Vu
28	37-38			0.88	0.20	5.4	2.52	2.67	0.0	27.8	ls,SVu,Sty
29	38-39			0.80	0.47	6.5	2.48	2.65	1.7	34.2	ls,SVu
30	39-40			34	20	6.5	2.48	2.65	1.5	46.5	ls,VC,SVu
31	40-41			UT	0.83	1.1	2.65	2.66	Tr	71.8	ls,VC,SVu,Sty
32	41-42			17	5000+	9.5	2.43	2.69	4.6	31.5	ls,VF,Vu,SP
33	42-43			1.32	UT	7.9	2.47	2.69	6.8	45.6	ls,VC,SVu,SP
34	43-44			3.64	0.73	6.9	2.50	2.68	6.8	67.5	ls,SVu,Sty
35	44-45			0.25	0.08	1.3	2.61	2.65	2.1	50.8	ls,VC,SVu
36	45-46			0.13	5000+	5.3	2.55	2.69	0.0	20.0	ls,VF,SVu,Sty
37	46-47			11	5000+	3.2	2.63	2.72	0.0	65.6	ls,VF,Vu,SP
38	47-48			0.93	5000+	9.3	2.44	2.69	1.2	51.7	ls,VF,SVu,SP
39	48-49			5.19	5000+	8.2	2.46	2.69	2.3	66.9	ls,VF,SVu
40	49-50			0.66	UT	7.3	2.50	2.70	1.2	43.3	ls,VC,Vu,Sty,SP
41	50-51			12	5000+	9.7	2.44	2.70	Tr	79.4	ls,VF,SVu
42	51-52			0.49	5000+	4.2	2.61	2.72	Tr	61.2	ls,VF,SVu
43	52-53			16	2.11	6.3	2.55	2.72	1.4	43.7	ls,SVu,Sty
44	53-54			4.17	0.22	5.3	2.54	2.68	0.0	54.9	ls,VF,SVu
45	54-55			FT	132	3.0	2.59	2.67	Tr	79.3	ls,VC,SVu
46	55-56			35	5000+	2.8	2.62	2.69	Tr	80.4	ls,VF,SVu
47	56-57			27	4.29	2.6	2.62	2.69	0.0	58.5	ls,VC,SVu
48	57-58			5.23	0.34	4.7	2.58	2.70	2.1	24.7	ls,SVu
49	58-59			0.10	0.12	2.6	2.62	2.69	0.0	29.2	ls,VC,SVu,Sty
50	59-60			0.11	14	5.5	2.54	2.69	1.5	88.5	ls,VC
51	60-61			UT	462	7.5	2.47	2.67	1.3	50.9	ls,VC,SVu
52	61-62			1.78	5000+	4.3	2.58	2.69	0.0	38.4	ls,VF,SVu,Sty
53	62-63			UT	2.31	2.6	2.65	2.72	0.0	30.8	ls,VC,SVu,Sty
54	63-64			UT	0.18	5.0	2.56	2.70	Tr	33.2	ls,VC,SVu
55	64-65			6.40	2.17	4.6	2.58	2.70	0.0	35.1	ls,Vu,Sty
56	65-66			30	6.90	5.1	2.53	2.67	0.0	58.0	ls,VF,Vu

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator [illegible] Field East Poplar Formation East Zone & Nisku

Well No. [illegible] Location SW SE 21-28N-57E Depths 6266-7439

Elevation [illegible] KB Date November 3, 1955 Lab. No. 468

SAMPLE NO	REPRESENTATIVE OF FEET	MINERALOGY OF SAMPLE	FOOTAGE	PERMEABILITY (AXIAL)	PERMEABILITY (MAX. ⊥)	EFFECTIVE POROSITY %	DENSITY (WET)	DENSITY (DRY)	SATURATION % OF PORE SPACE (RESIDUAL OIL)	SATURATION % OF PORE SPACE (WATER)	DESCRIPTION
57	6266-67			171	25	9.0	2.63	2.67	0.0	36.7	Ls,Vu,Sty
58	67-68			77	5000+	17.5	2.23	2.70	Tr.	38.9	Ls,Vf,Vu,SP
59	68-69			3.44	0.88	6.2	2.56	2.72	Tr.	58.4	Ls,Sty
60	69-70			20	5000+	8.0	2.68	2.75	0.0	73.8	Ls,VF,Vu,SP
61	70-71			2.25	0.7.	20.3	2.42	2.69	1.0	47.3	Ls,VC,SVu,Sty,SP
62	71-72			0.10	5000+	5.2	2.56	2.72	2.1	70.2	Ls,VF,SVu,Sty,SP
63	72-73			0.11	0.07	4.0	2.60	2.71	Tr.	21.9	Ls,VF,SVu,Sty
64	73-74			0.10	5000+	2.6	2.64	2.70	Tr.	83.2	Ls,VF,Sty
	CORE #20	7h24-75	Rec. 73'	Nisku							
NS	7h30-35										
65	7[illegible]			0.17	[illegible]	[illegible]	2.67	2.82	6.4	43.1	Do,Vu,I
66	7[illegible]			0.12	5000+	6.1	2.67	2.84	3.0	42.8	Do,Vu,I,SP
67	7[illegible]			0.02	5000+	5.2	2.69	2.84	2.3	42.9	Do,VF,I,SP
68	7[illegible]			1.90	5000+	12.2	2.50	2.85	5.2	30.3	Do,VF,I,SP
69	7[illegible]			13	12	5.8	2.64	2.80	7.6	35.9	Do,VF,Sty,I
70	20-21			3.57	1.42	9.2	2.58	2.80	7.5	2.6	Do,SVu,I
72	21-22			1.64	0.20	7.6	2.58	2.80	8.4	25.1	Do,I,A
72	2[illegible]-23			-0.01	[illegible]	2.[illegible]	2.75	2.82	0.0	21.9	Do,VC,SP
73	23-24			0.03	0.06	6.1	2.67	2.[illegible]	Tr.	36.0	Do
74	24-25			35	0.73	1.[illegible]	2.77	2.82	3.4	85.4	Do,VC,Sty
75	25-26			2.03	0.17	5.1	2.69	2.83	2.2	47.1	Do,A
76	26-27			0.22	0.11	1.1	2.78	2.80	0.0	32.[illegible]	Do,MC
77	27-28			3.5	1.15	5.9	2.63	2.80	7.5	31.2	Do,VC
78	28-29			0.T.	5000+	6.4	2.67	2.85	10.2	50.9	Do,VF
79	29-30			0.02	27	1.8	2.78	2.82	3.7	76.7	Do,VC
80	30-31			0.31	9.54	4.7	2.79	2.86	Tr.	73.3	Do,VC
81	31-32			1h8	6.82	3.0	2.76	2.85	0.0	43.7	Do,VC
82	32-33			0.18	5.79	4.2	2.72	2.84	0.0	27.4	Do,VC
83	33-34			3.94	0.03	3.3	2.70	2.79	12.8	60.6	Do,Sty
84	34-35			2.32	5000+	6.7	2.60	2.85	6.8	26.7	Do,VF,SP

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Hurnley Corporation Field East Poplar Formation Nisku

Well No. #62 Unit Location SW SE 27-28N-51E Depths 7435-7466

Elevation 2163 KB Date November 23, 1955 Lab. No. 468

CORE NO.	DEPTH (REPRESENTATIVE OF FOOT)	MIDDLE OF SAMPLE	FOOTAGE	PERMEABILITY (MILLIDARCYS)		FIELD POROSITY %	DENSITY		SATURATION (PERCENT OF PORE SPACE)		DESCRIPTION
				MAX.	VERT.		GRAIN	BULK	PHYSICAL OIL	WATER	
	CORE #21	7435-75	Rec. 40'								
85	7439-36			4.02	0.21	11.5	2.50	2.83	5.9	56.6	Do, VF, Vu, I
86	36-37			0.58	0.47	4.3	2.71	2.83	2.3	86.9	Do, SVu
87	37-38			2.61	0.33	4.2	2.71	2.83	0.0	15.3	Do, VC
88	38-39			0.07	0.05	1.5	2.75	2.82	0.0	21.7	Do, VC, Sty
89	39-40			0.10	0.03	7.2	2.63	2.83	4.3	42.8	Do, VC, I
90	40-41			7.30	2.92	9.1	2.61	2.87	5.4	36.6	Do, VC, Vu, I
91	41-42			3.90	1.07	7.6	2.65	2.87	1.4	20.5	Do, VC, Vu, I
92	42-43			0.02	5000+	5.4	2.73	2.88	1.9	26.9	Do, VF, I, SP
93	43-44			22	8.65	7.5	2.69	2.80	Tr.	25.2	Do, VC, Vu, I
94	44-45			30	6.24	10.9	2.68	2.78	11.0	45.0	Do, Vu, I
95	45-46			0.36	1.84	9.3	2.64	2.80	7.3	56.2	Do, Vu, I
96	46-47			1.	0.7.	9.0	2.67	2.82	4.4	40.4	Do, Vu, I
97	47-48			6.95	0.61	7.8	2.60	2.82	7.8	44.1	Do, SVu, I
98	48-49			0.94	0.10	3.0	2.75	2.83	3.3	27.0	Do, VC, SVu
99	49-50			3.48	0.20	3.9	2.73	2.84	2.6	54.1	Do, VC, SVu
100	50-51			0.01	45	1.8	2.77	2.82	10.6	77.2	Do, VF
101	51-52			12	2.46	4.0	2.75	2.86	10.0	47.0	Do, VC, SVu
102	52-53			3.77	0.7.	5.0	2.72	2.86	1.8	18.8	Do, SVu, SP
103	53-54			0.7.	0.13	6.3	2.66	2.84	0.0	15.0	Do, I&VC, SVu
104	54-55			0.17	0.16	2.1	2.79	2.85	0.0	11.0	Do, VC, SVu
105	55-56			0.17	0.03	1.9	2.81	2.86	0.0	14.2	Do, VC
106	56-57			3.46	0.32	2.0	2.80	2.84	0.0	25.0	Do, Sty
107	57-58			0.21	0.17	2.9	2.77	2.84	0.0	13.4	Do, Sty
108	58-59			1.54	1.26	2.3	2.80	2.86	0.0	17.4	Do, VC
109	59-60			1.28	49	5.4	2.67	2.82	8.1	68.1	Do, VF, I
110	60-61			2.83	U.T.	8.4	2.60	2.84	1.3	36.1	Do, VC, I, SP
111	61-62			1.63	0.19	3.6	2.68	2.80	0.0	81.3	Do, VC, I
112	62-63			0.99	0.51	7.3	2.63	2.84	0.0	81.3	Do, VF, I
113	63-64			1169	9.86	5.2	2.67	2.82	Tr.	49.4	Do, VC, I
114	64-65			0.40	5000+	4.8	2.69	2.83	0.0	93.1	Do, VF, I
115	65-66			0.10	5000+	7.4	2.65	2.86	0.0	19.3	Do, VF, SVu, SP

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Murphy Corporation Field East Poplar Formation Nisku

Well No. #62 Unit Location 31-32-27-22N-52E Depths 7466-7475

Elevation 2160 KB Date November 29, 1955 Lab. No. 558

SAMPLE NO.	REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY MAXIMUM	PERMEABILITY VERTICAL	EFFECTIVE POROSITY	DENSITY GRAIN	DENSITY BULK	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
116	7466-67			0.26	5000+	3.7	2.68	2.76	0.0	34.1	Do, VF
117	67-68			0.02	0.01	1.3	2.76	2.80	0.0	20.8	Do
118	68-69			0.02	0.05	1.9	2.76	2.82	Tr.	23.2	Do, VC
119	69-70			0.15	1.37	2.1	2.84	2.90	0.0	54.3	Do, VC
120	70-71			0.01	0.02	1.4	2.81	2.85	0.0	75.0	Do, VC
121	71-72			0.05	0.05	3.9	2.79	2.90	0.0	13.3	Do, VC
122	72-73			0.05	U.T.	6.6	2.69	2.69	0.0	10.2	Do, I, SP
123	73-74			0.46	U.T.	2.0	2.83	2.89	0.0	39.0	Do, SP
124	74-75			0.02	0.02	1.3	2.75	2.78	0.0	13.1	Do

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Hurley Corporation Field East Poplar Formation Nisku

Well No. #67 Unit Location SW SE 27-28N-51E Depths 7435-7466

Elevation 2160 KB Date November 28, 1955 Lab. No. 468

SAMPLE NO	REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY RADIAL	PERMEABILITY VERTICAL	EFFECTIVE POROSITY %	DENSITY BULK	DENSITY MATRIX	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
	CORE #21	7435-75	Rec. 40'								
85	7435-36			4.02	4.21	11.5	2.50	2.83	5.9	56.6	Do, VF, Vu, I
86	36-37			0.58	0.67	4.3	2.71	2.83	2.3	80.9	Do, SVu
87	37-38			2.61	0.38	4.2	2.71	2.83	0.0	15.3	Do, VC
88	38-39			0.07	0.05	1.5	2.78	2.82	0.0	24.7	Do, VC, Sty
89	39-40			0.10	0.08	7.2	2.63	2.83	4.3	42.8	Do, VC, I
90	40-41			7.50	2.92	9.1	2.61	2.87	5.4	36.6	Do, VC, Vu, I
91	41-42			3.90	1.07	7.6	2.65	2.87	2.4	20.5	Do, VC, Vu, I
92	42-43			0.02	5000+	5.4	2.73	2.88	1.9	46.2	Do, VF, I, SP
93	43-44			22	8.65	7.5	2.69	2.80	Tr.	25.2	Do, VC, Vu, I
94	44-45			30	6.24	10.9	2.48	2.78	11.0	43.0	Do, Vu, I
95	45-46			0.36	1.58	9.3	2.54	2.80	7.3	56.6	Do, Vu, I
96	46-47			12	U.T.	9.0	2.57	2.82	4.4	40.4	Do, Vu, I
97	47-48			6.95	0.31	7.8	2.60	2.82	7.8	43.1	Do, SVu, I
98	48-49			0.94	0.10	3.0	2.75	2.83	3.3	27.0	Do, VC, SVu
99	49-50			3.48	0.20	3.9	2.73	2.84	2.6	54.1	Do, VC, SVu
100	50-51			0.01	45	1.8	2.77	2.82	10.6	77.2	Do, VF
101	51-52			42	3.46	4.0	2.75	2.86	10.0	47.0	Do, VC, SVu
102	52-53			3.77	U.T.	5.0	2.72	2.86	1.8	18.8	Do, SVu, SP
103	53-54			U.T.	0.13	6.3	2.66	2.84	0.0	23.0	Do, I&VC, SVu
104	54-55			0.47	0.16	2.1	2.79	2.85	0.0	37.9	Do, VC, SVu
105	55-56			0.17	0.03	1.9	2.81	2.86	0.0	14.2	Do, VC
106	56-57			3.46	0.02	2.0	2.80	2.84	0.0	25.0	Do, Sty
107	57-58			0.01	0.13	2.5	2.77	2.84	0.0	13.6	Do, Sty
108	58-59			1.54	1.26	2.3	2.80	2.86	0.0	17.4	Do, VC
109	59-60			1.28	49	6.4	2.67	2.82	8.1	68.1	Do, VF, I
110	60-61			2.83	U.T.	6.4	2.60	2.84	1.3	38.1	Do, VC, I, SP
111	61-62			1.63	0.29	3.8	2.68	2.80	0.0	81.3	Do, VC, I
112	62-63			0.92	0.51	7.3	2.63	2.84	0.0	87.3	Do, VF, I
113	63-64			1169	9.86	5.2	2.67	2.82	Tr.	49.8	Do, Vu, I
114	64-65			0.40	5000+	4.8	2.69	2.83	0.0	93.1	Do, VF, I
115	65-66			0.30	5000+	7.4	2.65	2.86	0.0	19.2	Do, VF, SVu, SP

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537

GLENDIVE, MONTANA

CORE ANALYSIS REPORT

Nisku

Field East Poplar Well No. #63 Unit

Operator Murphy Corporation Laboratory No. 463

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less that 0.01	1	-0.01	2.6	31.9	0.0
0.01 - 0.09	8	0.04	3.0	27.3	0.0
0.10 - 0.99	11	0.42	3.9	37.3	1.5
1.00 - 9.9	19	3.75	5.7	42.2	3.4
10 - 99	9	31	5.3	58.1	6.5
100 - 999	2	252	4.4	33.9	3.8
1,000 +	10	4,617	6.4	41.7	3.1
Total summarized	60				
Total analyzed	60				
0.01 +	59	797	5.0	41.6	3.0
0.10 +	51	922	5.3	43.8	3.5
1.00 +	40	1175	5.7	45.5	4.1
10 +	21	2236	5.7	43.4	4.7
100 +	12	3990	6.1	41.2	3.2
1,000 +	10	4617	6.4	41.7	3.1

Total porosity-feet 298

Total millidarcy-feet of 0.1 md. and above 47,023

Mean matrix density 2.83

Remarks: .....

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

CORE ANALYSIS REPORT

East Zone

Field East Poplar Well No. #63 Unit

Operator Murphy Corporation Laboratory No. 463

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less than 0.01					
0.01 - 0.09					
0.10 - 0.99	8	0.49	4.2	32.1	0.6
1.00 - 9.9	9	4.51	5.8	42.9	1.9
10 - 99	6	22	5.7	52.4	1.1
100 - 999	3	255	6.5	61.9	0.4
1,000 +	13	5000+	6.9	59.8	0.8
Total summarized	39				
Footage omitted	39				
0.01 +	39	1691	5.9	50.7	1.0
0.10 +	39	1691	5.9	50.7	1.0
1.00 +	31	2127	6.3	53.8	1.1
10 +	22	2995	6.5	58.1	0.8
100 +	16	4110	6.8	60.2	0.7
1000 +	13	5000+	6.9	59.8	0.8

Total porosity feet 229

Total oil density feet at 0.1 md. and above 55,944

Mean oil saturation 2.69

Remarks .....

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537

GLENDIVE, MONTANA

CORE ANALYSIS REPORT

A Zone

Field East Pooler Well No. #63 Unit

Operator Murphy Corporation Laboratory No. 468

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less that 0.01					
0.01 - 0.09	3	0.02	9.2	73.3	Tr
0.10 - 0.99					
1.00 - 9.9	5	3.64	0.9	52.5	1.2
10 - 99					
100 - 999					
1,000 -	4	5000/	1.5	70.8	Tr
Total summarized	12				
Total analyzed	12				

0.01 +	12	1669	9.9	63.3	2.5
0.10 +	9	2224	1.2	66.6	0.7
1.00 +	9	2224	1.2	66.6	0.7
10 +	4	5000/	1.5	70.8	Tr
100 +	4	5000/	1.5	70.8	Tr
1,000 +	4	5000/	1.5	70.8	Tr

Total porosity-feet 11.0

Total millidarcy feet of 0.1 md. and above 60,000/

Mean matrix density 2.69

Remarks:

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537

GLENDIVE, MONTANA

CORE ANALYSIS REPORT

Upper Charles

Field East Poplar Well No. #53 Unit

Operator Murphy Corporation Laboratory No. 469

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less than 0.01					
0.01 - 0.09	8	0.06	3.5	45.8	17.6
0.10 - 0.99	3	0.80	5.1	37.2	4.7
1.00 - 9.9	3	3.70	4.3	52.0	12.0
10 - 99					
100 - 999					
1,000					
Total sectorized	14				
Total evaluated	14				
0.01 +	14	0.87	4.0	51.7	13.6
0.10 +	6	1.95	4.7	59.5	8.4
1.00 +	3	3.70	4.3	52.0	12.0
10 +					
100 +					
1000 +					

Total porosity-feet 56.5

Total evaluated feet of 0.1 md and above 11.7

Mean matrix density 2.70

Remarks .....

RECORD OF PLUGGING AND ABANDONMENT

July 31, 1962

Lease and Well No. East Poplar Unit No. 63

Field East Poplar County Roosevelt State Montana

Well Location SW NE Section 27, T28N, R51E

Status Prior to Abandonment:

Date completed February 28, 1962 Date of Last Workover July 20, 1960

TD 8521' PBTD 5848' Perforations B-4 - 5783-93', B-5 - 5809-27

Producing Zone None, temporarily abandoned

Cumulative Production 5095 BO, 6768 BW (Kibbey Sandstone)

Justification for Abandonment:

5 1/2" production casing was set at 5945' with 350 sacks cement and the top of cement was calculated to be at 4421'. This well was completed in the Kibbey Sand on February 8, 1956, through perforations 5231-43'. Initial potential was 54 BOPD, no water, flowing. The flowing life was short and after pumping equipment was installed, the production declined rapidly. Production increased after a stimuli with a small shot of acid and a sand-oil frac, but again decreased rapidly down to 11 BOPD, 92% water, at which time the well was temporarily abandoned.

Summary of Abandonment:

5-18-62
MI & RU plg unit. Picked up 2 jts of 2 3/8" tbg & tagged btm at 5848'. Disp oil and SW 10.2 to 10.4# w/mud. Plgd perfs (B-4 - 5783-93', B-5 - 5809-27' and Kibbey Sand stone 5231-43') as follows:
Plug #1 5783-5575' w/25 sacks.
Plug #2 5231-5021' w/25 sacks.
Cut and pld 3964' of 5 1/2" Cond. 2 csg. Set 25 sack cmt plug at 3964' on top of 5 1/2" csg. stub. Plgd btm of 9 5/8" surface csg w/25 sack plug. Set 10 sack cmt plug at top of surface csg and cmtd in a 4" steel post marker in accordance 2/the regulations of the Montana Oil and Gas Conservation Commission and United States Geological Survey.

Disposition of Salvable Material:

3964' of 5 1/2" 15.50# csg recovered from well, Cond. 2, transferred to EPU Stock. 10 3/4" Cameron csg head, 10" OCT tbg head, 10" x 5 1/2" csg hanger, 2" Cameron LP valve, 2" Orbit gate valve, 6" x 2" Cameron adapter flange - transferred to EPU Stock.
No flowline.